

FEBRUARY [INCLUDING JANUARY] 1924 *Key*

THE SLIPSTREAM MONTHLY

PUBLISHED IN DAYTON OHIO

"THE BIRTHPLACE OF THE AIRPLANE
THE CENTER OF AVIATION"

GARWOOD '23

Vol. 5

No. 1-2



ON-TO-DAYTON!

20 CENTS THE COPY

LIBERTY COAL COMPANY

YARDS AND OFFICE—IDAHO and PENN. R. R.
DAYTON, OHIO

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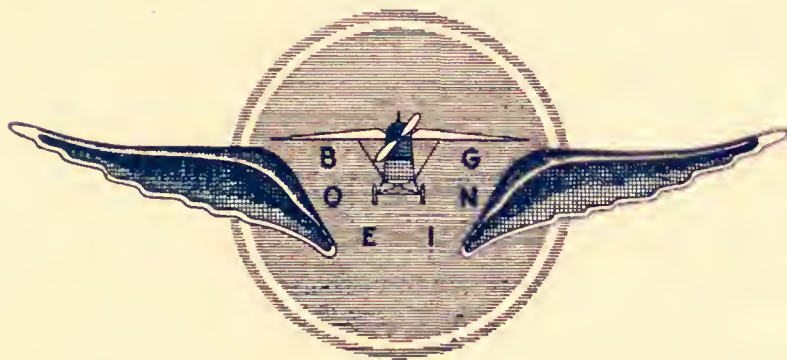
Above C. O. D. prices. For charge account add 25c per ton.

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Boeing Airplane Company

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Dayton has a world-wide reputation for precision work. The products of her many industries are famous for their accuracy. Visit these industries. See for yourself why they have given Dayton her international standing as one of the world's leading manufacturing centers. A cordial invitation to visit the plant of The National Cash Register Company is extended to all McCook Field employees.

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WEIGHT CARRYING AIRPLANES**

Contractors to the United States Government

SLIPSTREAM



PUBLISHED MONTHLY WITH NO EXPENSE TO THE GOVERNMENT

SLIPSTREAM—The stream of air driven aft by the propeller

VOL. 5

FEBRUARY (*including January*)

NOS. 1-2

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FRED F. MARSHALL (Member N. A. A., Dayton Chapter) Editor

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NOTE TO ADVERTISERS AND READERS

Attention is called to the term of February designating this issue of Slipstream. In reality this issue represents the January and February issues which plan has been necessary to permit of an advanced "off-the-press" date for future regular monthly issues after the custom followed by all of the leading magazines of the country.

The action will not deprive the subscriber from receiving the full twelve monthly issues during the year.

New York Honors Wright Brothers



—International News Reel Photo.

To honor the Wright Brothers on the twentieth anniversary of their first successful airplane flight, a squadron of Army airplanes, commanded by Major William N. Hensley, Jr., commanding officer of Mitchel Field, L. I., flew over New York City in formation. There were in all, eighteen planes which participated in this beautiful and awe inspiring demonstration. The view above shows a formation of the planes flying over Brooklyn Bridge.

Back to the Old Home Town

AS a sort of fitting climax following closely in the wake of a beautiful demonstration held by the citizens of Dayton, Ohio, in honor of its two most renowned sons—the Wright Brothers, on the twentieth anniversary of their first successful airplane flight, came the news that this city had been named the site of the 1924 International Air Races to be held October 2, 3, and 4.

To say the least, it seems a strange, yet not an inappropriate play of fate which has seen fit to guide this world-wide communion of the aeronautical elements back to this little city of the Miami Valley where the airplane was born, after some twenty-one years of growth. More interesting still, it will appear to those who are inclined to the sentimental facts, to know that the great race course for this air classic will include the actual spot where these inventors, the Wright Brothers, experimented with their first crude flying machine over a score of years ago. The old shed, or hangar which sheltered the craft still stands, with door awry and threshold overgrown with weeds, "like the forlorn nest from which the birds have flown," to be gazed at by the curious thousands who will flock there to witness the great races.

It is a bit far-fetched, on the other hand, to give full credit to the favor of fate, in bringing the Air Races to Dayton. A more prosaic body in the way of a special committee appointed by the National Aeronautical Association was given the right to decide which city was the best deserving and fitted to handle the great races. Not a few cities lay definite claim to the honor and it was only through the energy, diplomacy, and enterprise of that group of public-spirited citizens who comprise the Dayton Air Committee coupled with the presence of its well equipped flying fields that finally induced the unanimous decision of the committee in favor of the Gem City.

However, the romantic setting thus afforded in bringing to the home town of the Wright Brothers and the Birthplace of the Airplane, this epitome of a twenty-one years' growth in aviation can be attributed wholly to Dame Fate.

Only those cities who have experienced the "ordeal" of staging the International Air Races in the past can know just what lies before the citizens of Dayton during the ensuing spring and summer months. Indianapolis, with its annual influx of speedway fans, New Orleans with its Mardi Gras, New York City with its World Series have little or no conception of the vast outlay of preparation that the citizens of Dayton must provide in order to handle successfully the air races and thus hold faith with the hundreds of thousands of

sight-seers who will flock into her gates with the expectation of a pleasant visit.

FORTUNATELY Dayton is already an established air center and consequently well provided with both civil and Government flying fields. McCook Field, which is just divided by the north corporation line, and Wilbur Wright Field, some seven miles northeast of the city, provide facilities which would otherwise cost many thousands of dollars to duplicate in even a small degree.

But these posts, although an important item, do not assure the success of the races. It is placed as a conservative estimate that at least 250,000 people—the greatest crowd ever assembled in the middle west, will pour into the City of Dayton during the three days of the races. How this city which can scarcely boast of half this number in population can take care of such a vast pilgrimage is only one of the puzzling problems which its citizens must work out.

The hotels will be crowded to the lobbies, hundreds of private homes will be filled with out-of-town people, restaurants and lunch counters will be swarmed twenty-four hours of the day with impatient, hungry throngs, streets will be overflowed with pedestrians, traffic jams will add to the general pandemonium, tractions, railroads, bus lines, and taxi service will be swamped with thousands of eager patrons. It can readily be seen that even with the full measure of unselfish co-operation and aid volunteered by Dayton's public-spirited citizens this mighty project cannot be carried through without proper financing. The various committees appointed to take care of the many phases of the great program have a tremendous amount of responsibility thrust upon them, the press, the advertising, the housing, the prizes, the traffic, the supply, in fact, every detail of the general scheme will take no little expenditure of money. It is up to the citizens of Dayton to raise this money.

Of course with the hundreds of thousands of visitors will come millions of dollars which will pour into the coffers of Dayton. There is not a single business man but who will share in the great financial boom which will come with the races.

But Dayton people wanted the International Races, not from the standpoint of its financial gamble. This little city nestling in the very heart of our nation's industrial activity is trying to show the world that she is rightly laying claim to the title of "The Aviation Center of the U. S." Her people are definitely "sold"

to aviation as both a practical commercial asset as well as the most economical source of absolute national protection. In bringing the air races to their city they do so with the primary motive of showing to the world the true status of aviation in its diverse associations with the industry and general welfare of our nation.

On to Dayton!

Pulitzer Race Committee

The executive committee in charge of making arrangements for the International Air races to be held in Dayton next fall, met at The National Cash Register Co., Wednesday and appointed members to seventeen committees having charge of various phases of the work. The selections of names is tentative, based upon the acceptance of the individuals. Additional committees will be appointed if the occasion requires.

A special meeting at which all committee and sub-committee members are to attend, will be called within the next week, it was indicated at the session.

These committees were appointed: Traffic, Transportation, Policing, and Parking; Paul Ackerman, chairman, W. O. Pease, H. E. Myers, S. A. Mosby, Pearl Whitehead, M. T. Otto, R. H. Hagerman, C. C. Haines, Theodore Heiland, John L. Miller, Sheriff Howard Webster, Chief of Police J. H. Woodward.

Entertaining and Reception committee: Edward E. Burkhardt, chairman, presidents of all Noon-Day clubs; C. E. Burnett, W. B. Moore, Mayor Frank B. Hale, Paul O'Brien, Gov. Fred C. Runkle, and C. E. Comer.

Publicity: H. W. Karr, Bernard Losh, Maurice Hutton, Clarence Green, Horace Lytle, Bert Klopfer, Walter Moore, and Fred F. Marshall.

Advertising: T. C. McMahon, H. W. Karr, B. B. Blain, and S. H. Summers.

Concessions: Robert Elder, chairman, I. L. Holderman, E. J. Lauterbach, Earl Reeder, Mick Redelle, Walter Delscamp, and W. F. Bippus.

Program: Walter B. Moore, F. J. Blose, B. B. Geyer, E. D. Gibbs, Harley J. Brown, T. C. McMahon, and R. S. Fitzgerald.

Tickets: I. G. Kumler, Elmer Redelle, and Frank G. Kemper.

Roads: C. H. Paul, Ezra M. Kuhns, F. O. Eichelberger, J. J. Baker, and one commissioner from Green and Clark counties.

Announcer: Louis Meister, McCook Field.

Medical: Flight surgeons from Wilbur Wright and McCook Fields and Lt. Col. C. P. Grover.

Supplies: Fowler Smith, R. S. King, Russell Gerkins, Pearl Deaton, and one representative from the Pure Oil Co.

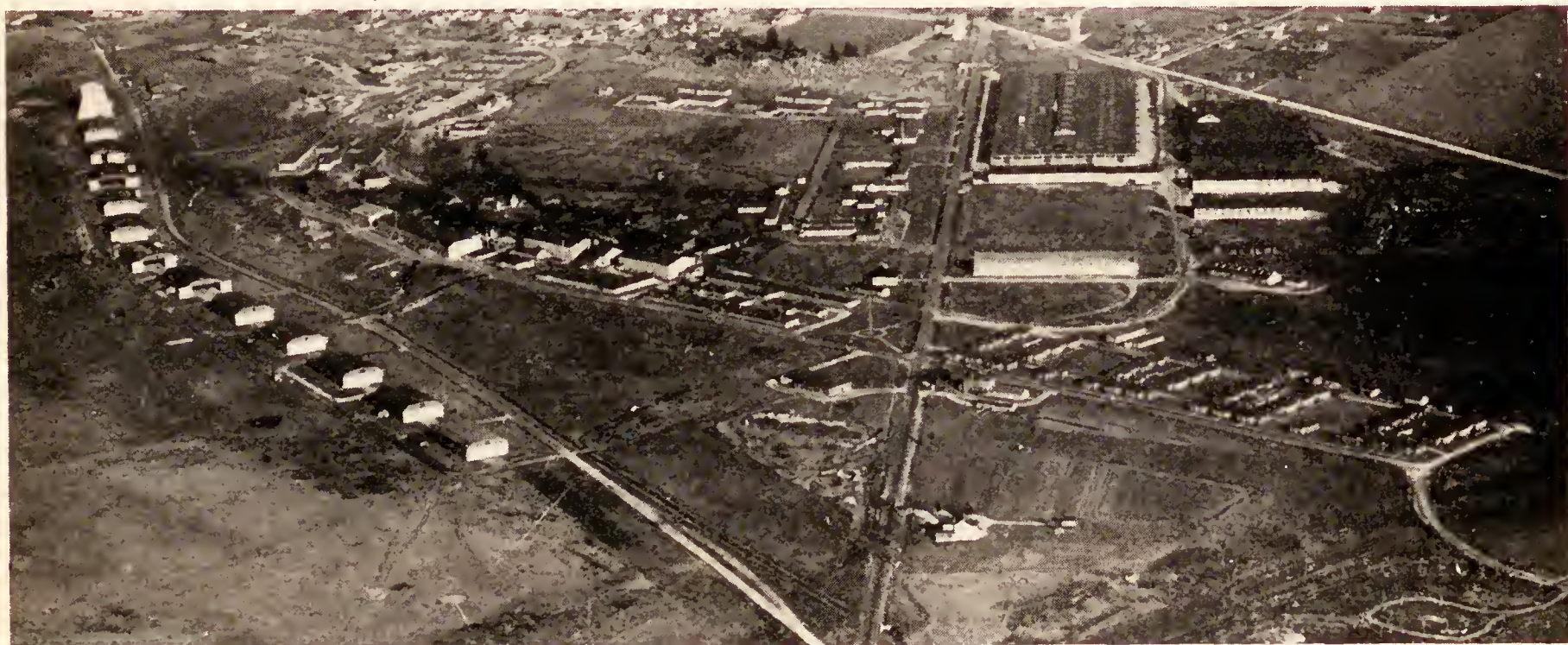
Flying Entertainment committee: Commanding officers of Wilbur Wright, McCook, and Selfridge Fields and civilian flyer's entertainment committee, A. E. Johnson and Bernard Whelan.

General committee on grandstand buildings and pylons: U. C. Theiss, chairman, Harry Williams, E. Smith, Peter Kuntz, Jr., S. S. King, Howard Arnold, C. D. Putnam, W. A. Keyes, J. W. Downer, and James Atwood.

Housing committee: John P. Breen, Jay Gibbons, A. B. Gates, Harry Patterson, Russel Pryor, H. B. Dickson, W. W. Snyppe, Edward Wright, Tom McGee, A. W. Brock, and Lieut. Winfield S. Hamlin.

Decorations: H. W. Brown, E. C. Lay, Fred Fleishauer, Roy Cheesman, and Harry Rudd.

Where the Pulitzer Races Will Be Held

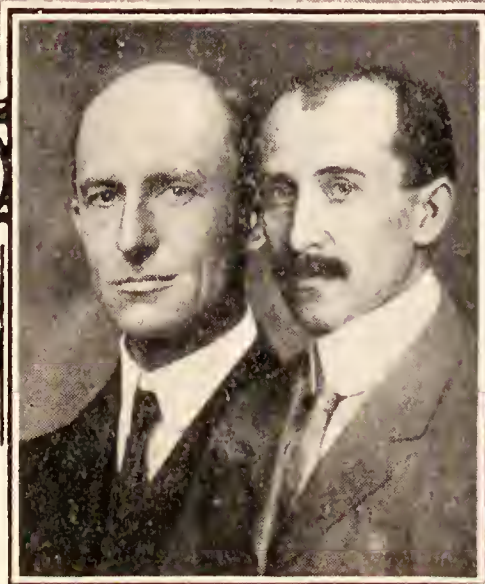


Wilbur Wright Field—near Dayton, Ohio

When Wrights Were Honored by Big Demonstration in Home City



Scene at Dayton Union Depot when distinguished guests were welcomed December 17.



At left are shown three honored guests in Dayton on the 20th anniversary of flying. They are left to right: Wing Commander Mario Calderara, attache Italian embassy; Commander H. A. Brown, naval attache British embassy, and Captain Georges Thenault, French air attache. Miss Katherine Wright and Major General Mason M. Patrick, shown at the door of the Wright home.

At the top is shown Mr. F. B. Patterson, president of the N. A. A., presenting a medal to Mr. Orville Wright, the medal showing the progress in flying. The pictures were taken at the Wright Home, December 17, 20th anniversary of flying. The medal is pictured below at the left. Wilbur and Orville Wright are shown below the group and at the right of the medal.

Officials of 1924 Pulitzer Races



WALTER B. MOORE



H.W. KARR



MAJ. A.W. ROBBINS



F.B. PATTERSON



ORVILLE WRIGHT



L.W. MCINTOSH

Airplanes for Russia

It is reported that a consignment of Fokker military airplanes has been detained at the Riga Custom House while en route to Soviet Russia. The consignment arrived in Lithuanian railway trucks and had passed through Lithuania without arousing suspicion.

This is the first known attempt to deliver such articles by rail, all previous deliveries having been made by air or by sea transport.

This consignment is possibly a portion of a large order placed with the Fokker Co. The number of aircraft ordered has been stated to be 500. Mr. Fokker himself denies any knowledge of such an order, but in any case a number of Soviet officials have been stationed at Schipol aerodrome (Amsterdam) and one machine in every five turned out has been flight-tested by a Soviet pilot.

A Burmese Aerial Survey

The government of Burmah has authorized the making of an aerial survey of the Delta of the Irrawaddy and the work has already begun. The Delta occupies an area of 777 square miles and it is expected that a further 1,000 square miles will be included so as to bring in much of the surrounding country which includes much impenetrable forest and is very malarial.

The estimated cost of the survey if limited to the Delta only is £22 per square mile, but for the whole 1,777 square miles the cost per square mile will be much cheaper. Owing to the nature of the country seaplanes are being used.

The operations are being directed by Mr. Ronald Kemp, who was recently Chief Inspector of Aircraft in India, a well-known early British pilot who took his ticket on an Avro biplane in May, 1911.

Flight by Man Power

By Fred Gerhardt

Flight Research Engineer, McCook Field

EDITOR'S NOTE:—It would no doubt be judged presumptuous for *Slipstream* to announce that a new epoch in flying has been ushered in with the recent debut of the Gerhardt Cycleplane, but even with the presence of the popular ridicule which followed the unspectacular "initial flights" of the strange craft there must be a certain trend of seriousness attached to the fact that the machine did actually leave the ground on several occasions and remained in the air a brief period solely by the propulsive power furnished by the pilot. We must also attach a certain amount of significance to the idea since it must be admitted that the men who conceived it, did so upon scientific calculations, and with no hope of accomplishing a complete success at this time. It is believed therefore that our readers will be interested in the true facts concerning the Cycleplane as written by the inventor, F. W. Gerhardt.

As every one knows the problem of flying by human power is extremely old. No doubt King "Tut" had occasion to discuss the problem with his long-bearded philosophers. At least the Greeks no longer considered it "not stuff" after one of their architects by the name of Daedalus made his escape with wings of wax from the Island of Crete, where he son Icarus, with the same equipment was imprisoned. In order to keep all of the records in the family his son, went after altitude instead of distance and got so near the sun that his wings melted. Unfortunately he did not carry a barograph, and the F. A. I. refuses to homologate his record. Otherwise Lieutenant Maeready would find Sadi Leeointe a minor competitor.

Coming down to modern times, we find that the first tangible attempts at the solution of the problem of man powered flight were made by the French in the development of "Aviettes," or bievies equipped with wings. M. Poulaine in such an apparatus made a hop of some twenty feet and won the prize of 10,000 francs, for the first man to get off the ground in a man-powered aerial vehicle, although the characteristics of this flight were not what one could correctly term "human flight." In the first place, the power to fly horizontally was much above that which a normal man could develop as a maximum, for even a few seconds with such a machine and consequently it was necessary to gain an excess of speed by fast pedaling and to zoom in the air, making what is called a decelerated flight. The machine upon which this was done is of exceedingly small wing area and could not be sustained in the air by the sole effort of man power.

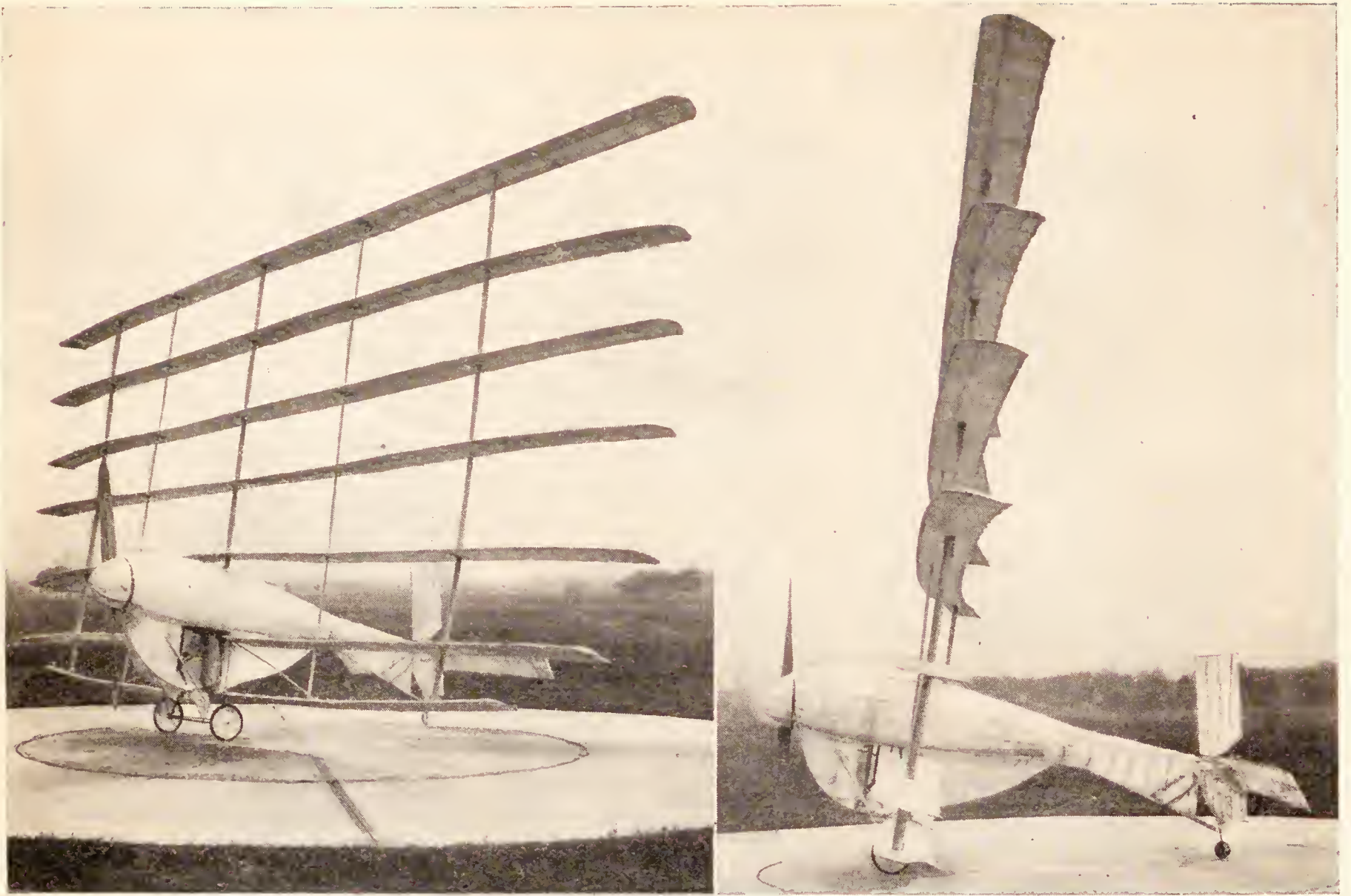
The beginning of the particular project which is discussed here may be said to date back to 1920 when the writer was employed under Dr. deBothezat, on airplane performance. In a discussion concerning the importance of new development in wing theory, and particularly the work of Prof. Prandtl on mutual induced drag, the Doctor was asked if this theory could be generalized to include any number of planes. He replied that this could be done, but that the calculation was so complicated as to discourage anyone with a mere minor mathematical training from attempting it. It did not seem however, too much to make an empirical extrapolation, aided by an experiment by Dr. Betz, by simulating the infinite number case.

The results of this calculation were so indicative of a number of important aerodynamical improvements with certain dimensions that the thought of multiplane possibilities in design not heretofore realized naturally followed.

OUR first inspiration to build a cycleplane, or vehicle to imitate the birds came as the result of a hot argument on the question engaged in by a group of engineer friends from McCook Field who found the evening hanging heavily upon our hands. My friend, Mr. Pratt, held the affirmative with the others including the writer refusing to listen in any vein of seriousness. For mere pastime, however, Mr. Pratt's arguments were put through a mathematical treatment and strange to say we were forced to admit that under this dose of anaesthetic, the difficulties seemed to grow more quiet and restful, in fact they submitted rather peacefully to a theoretical solution. It was not strange then that after considerable thinking on the subject of the multiplane, that the problem should be considered from that standpoint, and it is as much of a coincidence as pre-determined reasoning that what looked to be the only possible solution with the means at hand in materials, time, and finances was the design which appeared last July.

Naturally, we were both enthusiastic over the fact that some reasonable possibilities presented themselves, and decided to go ahead with the construction. Mr. Pratt made the first layout in February, 1923, which embodied mutual structural interpretation of the solution. The main details were finished a few days later. Resorting to the usual tactics we selected the loft of a barn for our construction work. It was quite easy to write pages of

"They said he couldn't do it, but he, poor fool, went ahead and did it."



Two views of the Gerhardt Cycle Plane

pretty mathematics and discover that all one had to do was to make a plane of 40 ft. span and 18 ft. high, but making up 300 running feet of wing is a totally different story. These were not the only difficulties encountered and we were very glad to gain the assistance of another member to our "dumbbell club" with the initiation of "Bob" Anderson who came to work at McCook Field about the time we were well started. After being acquainted with the main idea he took the cold plunge with the rest of us. Bob took over the problem of the propeller construction and completed the entire job.

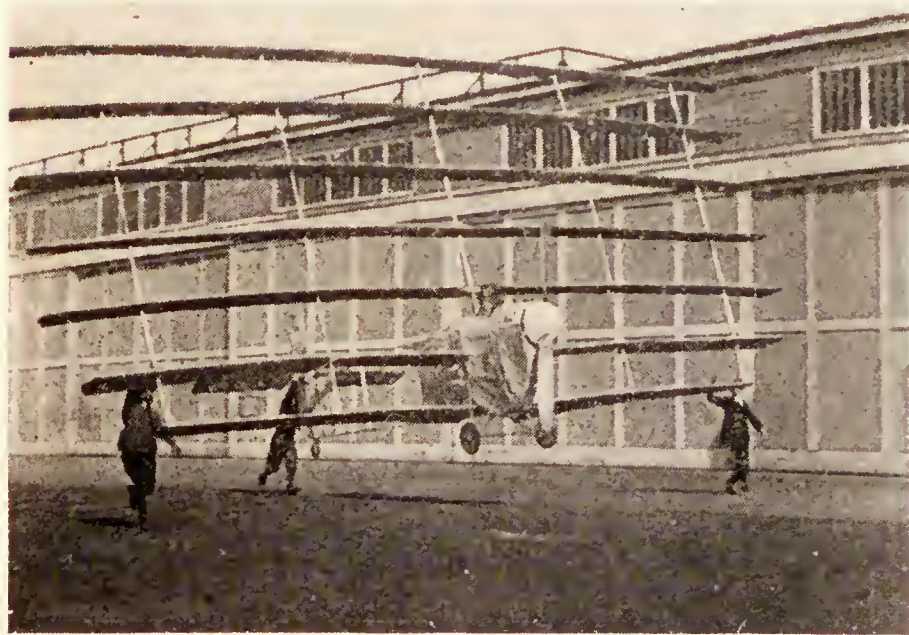
Considerable moral support as well was needed at this time. The first fuselage and propulsive mechanism were built for the pilot in a prone position, operating a very simple pedal mechanism and pusher propeller at the rear. When completed, this apparatus was pushed out the loft door, the propeller attached and an attempt made to turn it over at its designed revolutions. The only result was to demonstrate that all kinds of horizontal kicking should be left to the mule and other mammals differentiated biologically for such purposes. Men and other animals should do their kicking standing up, for the only results were to kick out the side of the fuselage and to create a gentle breeze reminding one of the ostrich feather fans wielded by some of Pharaoh's dusky attendants. Naturally we were forced to adopt what should have been the most obvious solution possible and

one which had been developed through long years of experience and experiment, namely, the bicycle position, and no amount of theory could have convinced otherwise.

TO make a long story short we secured an old double geared bicycle and after dissecting it and putting it together in such a way as to drive the propeller as a tractor, completed the individual parts. Up until this time the project had been kept secret on account of the high probability of failure. The only other let in on the secret was Lieutenant Harris who had made three guesses to find out what the strange inhabitant of the barn loft could be. Upon viewing it his general impression was that it looked reasonable, but made several criticisms which proved afterward to be exactly correct, namely, the lack of rigidity in the wing structure and the shortness of the fuselage taking into account the small control surfaces.

Looking about for a place to test the apparatus, it was discovered that the old heliometer hangar furnished a temporary space large enough and high enough to accommodate the cellule. It seemed in addition, not inappropriate that most of the strange and uncertain devices should find shelter under a common roof. Through the kind co-operation of the Engineering Division officials, who were curiously, if not seriously concerned with

the strange craft, this shelter was secured for a few days. Evidently, the device in question felt considerably at home, because it was assembled and erected safely, although with many heart-breaking evidences of collapse. The more of it that was assembled the more discouraged we became of ever making such a flimsy looking struc-



The Cycleplane in flight—the first actual record in history of a flight in a man-powered flying machine.

ture hold together long enough to be wheeled outside the hangar, let alone take the air with a load of 250 pounds.

ONE quiet night in July, Friday the 13th, to be exact, the craft was brought out. On account of the wet grass it was necessary to carry it to the apron in front of the hangar at which point we had selected to make the tests. Lieut. Harris acted as chief pallbearer, while Mrs. Harris lighted the way with the trusty family bus. Just as we arrived on the apron the Field flood lights were thrown on. These lights we soon discovered, were for an incoming plane and in a few minutes up rushed "Lucky Jim" Doolittle quite round eyed. He had seen the strange shadow cast by the cycleplane as he came in to land and was quite at a loss to determine just what kind of new contraption it was that had been hatched out in the cover of darkness.

The date lived up to its reputation, for despite the most violent efforts on the part of the cycleplane operator, the craft refused to budge an inch. A little push by bystanders only caused a portion of the tail to fall off and the whole rear end to sway violently about the tail skid and axis. Needless to say, the test was not considered an unqualified success.

Even among the originators there was not one to be found who would buy the machine for junk, but as a matter of piling on the last straw, we decided to try other tactics. Consequently, four days later the apparatus was pushed out with a towing wire attached after the fashion of a kite string. An automobile was employed to furnish the towing power. At first the machine was towed without a passenger and we were pleased to see it leave the ground at a much lower speed than one would be led to expect by computation from existing data. It

was then immediately attempted to do the same thing with a passenger, and much to our astonishment, Mr. Pratt was able with considerable exertion to keep the machine aloft for a considerable period of time without further towing power from the automobile. This in itself, as we later realized was actual flight by man power, the only difference being that the efficiency of the towing rope is 1.0 whereas that of the propeller is around 0.8. However, on this short hop the wings bowed badly, in fact, there were no two sections of wing throughout the whole cellule which had the same incidence or dihedral or sweepback.

AFTER putting in an extra strut we resumed the towing tests a few days later. At the end of the towing wire next to the auto we installed a spring balance reading to fifty pounds from which we could calculate the rate of pull necessary to keep the cycleplane free from the ground. When the test was repeated with the operator in the machine the total horse power drag of about 0.8 was registreed.

Although this was the main data we were seeking it remained to actually prove that this power could be developed by a normal person. Two days later, the usual tow off test with the automobile was made and when the machine had taken off, the operator "wound up" the propeller for about five seconds and then made a landing. It was disappointing to learn that the balance never read less than sixteen pounds. A decreased pitch of the propeller was then made and the next trial brought the balance reading to eight pounds, but with



The inventor, F. W. Gerhardt, seated in Cycleplane—note foot pedals which operate the propeller.

a too high rotational speed. A third pitch setting found the happy medium, for while the apparatus was off the ground for several inches over a distance of twenty feet, the spring balance was seen to read zero.

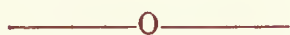
This naturally is the proof that steady level flight was accomplished. It must be admitted that quite a

(Continued on page 36)



A LITTLE BIRD THAT HOLDS UP TWENTY-FOUR BIG MEN

Twenty-four men seems a heavy load for this little Fokker scout, but the wing holds them without showing the least sign of strain. The wing is the main feature of the Fokker scout plane, which otherwise is unusually small.



Good Flying Qualities Absolutely Necessary in Commercial Planes

One of the best known aviation authorities in England, C. G. Grey, editor of *The Aeroplane*, published in London, commenting on the recent fatal accident on the London Manchester route said:

"The perfectly simple way of preventing all future accidents of this kind is for the Department of Civil Aviation to insist that all passenger carrying machines in future must be incapable of stalling and nose diving and that their landing speed must be much lower than it is. Already aeroplanes exist which cannot nose dive or spin after stalling. They merely sink rapidly and glide slowly forward and are under full control the whole time. One believes that it is impossible to make the ordinary passenger carrying Fokker stall and nose dive."

The last sentence is of particular interest as all pilots who have flown Fokker commercial machines agree with Mr. Grey's remarks concerning the impossibility of Fokkers stalling or nose diving. This absolute safety and full control even at speeds far below the stalling point is one of the principal features of the Fokker machines; the proof is in the 100% safety record of the Fokker F-3 monoplanes in over two million miles flown on the Amsterdam-Paris and Koenigsberg-Moscow air lines.

Airplane Duration and Long Distance Records

The recent homologation by the F. A. I. of a duration record made in U. S. A. where the machine received supplies of fuel in the air from another machine, has caused a lot of comment in the aeronautical press. The "*Svensk Motortidning*," Stockholm, says: "There can be no comparison between the old record (established by the Fokker) and the new record, and that the F. A. I. must find a new class for machines which revictual en route as otherwise all incentive for aircraft designers to improve the carrying capacity of aeroplanes is removed." The "*Der Luftweg*," Berlin, says that the F. A. I. must do some intensive thinking about the matter. The "*Gazette Dell'Aviazione*," Milan, also expresses grave concern as to the result of the action, while "*Les Ailes*," Paris, goes further and says that "the refuelling amounts to a landing and landings are not allowed. The spirit of the duration record is completely missed."

It is understood that the National Aeronautic Ass'n. is preparing a petition to the F. A. I. to institute a separate category of records for flights in which refuelling in the air is permitted; if this is agreed upon the records of Kelly and Macready in the Fokker T-2 will stand again as the existing world's records in the non-refuelling class.

Prominent Land Marks to Aviators

By Louis G. Meister

Air Service Airways Official

CROSS-COUNTRY flying over all kinds of terrain is an everyday occurrence, particularly since the airplane has proven itself a mode of safe, quick, and convenient travel. Pilots flying over country with which they are not familiar must depend upon various landmarks to check their course. These serve the same purpose that the lighthouses do for the marines. Highways and railroads connecting the large centers of population oftentimes must follow circuitous routes due to natural obstacles, such as mountains, lakes, rivers, etc., thereby deviating from a direct line. It is in this respect particularly, that the airplane proves itself supreme due to its ability to maintain a straight line of flight over these natural obstacles.

Heretofore the larger natural landmarks encountered such as lakes, rivers, etc., were the pilot's check-markers for his course, but as cross-country flying increased the pilots flew in inclement weather, under conditions of poor visibility, they realized that a closer check of their course was necessary. In some parts of the country natural landmarks were few so more attention was paid to railroads, highways, canals, etc., which are excellent checkmarkers and are shown on most maps.

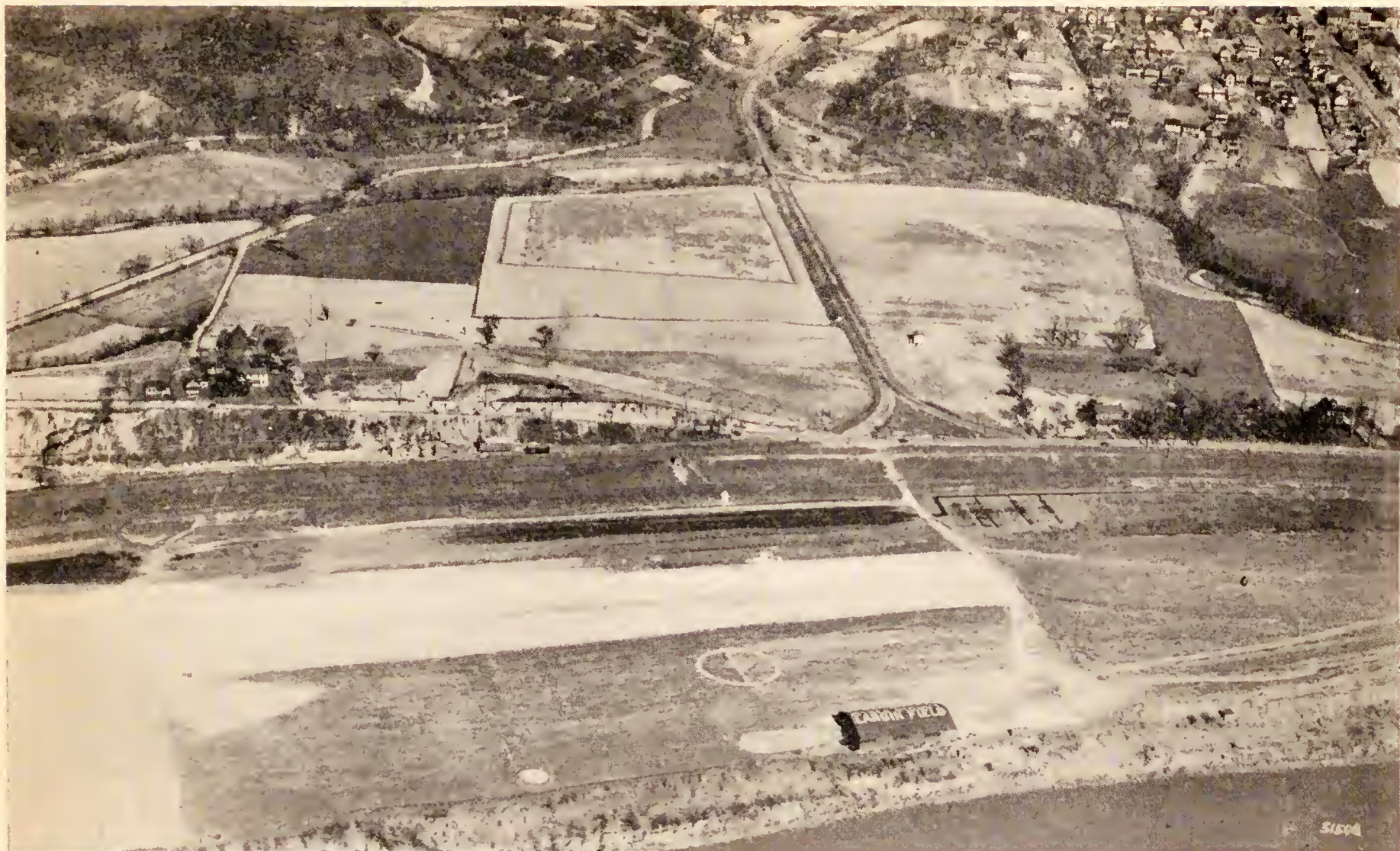
Prominent landmarks along a particular course should be emphasized before sending a pilot out for the

first time, and there are many of these which are excellent when viewed from the air. These include piers along the shores of lakes and rivers, oil and gas tanks, race tracks, railroad roundhouses, water towers, and in some instances large prominent buildings, such as the Summit House on top of the mountain range near Uniontown, Pa. The historical Mason Dixon line is a wonderful landmark viewed from the air and can be seen for many miles. Water towers marked with some distinguishing mark are excellent checkmarkers, particularly in bad weather, when pilots are forced to fly low and are on the lookout for them. The water tower at Wheaton, Ill., is a splendid example of this, also the trademark star on the Glenn Martin factory at Cleveland.

Shortly after the inauguration of scheduled flights over the Model Airway, the necessity for special strip maps showing more detail was very evident, because every field operating sent a different pilot on each trip, and the requests of the pilots for more detailed maps particularly over the mountains was found a necessity. All supplemental landmarks are excellent aids to aerial navigation, and full cognizance of their value is being given on the new aerial strip maps. A great amount of study has been given to this problem by the Airways Office of the Engineering Division, and satisfactory



Course check marker among wooded hills along Ohio River directing course west to Dayton, Ohio.



Langin Field marker, Moundsville, Va.

results have been obtained by various methods of route marking and by an intensive study of maps, particularly drawn for aviation purposes.

TO a pilot flying a course for the first time, all landmarks are valuable, and these should be shown on an aviation map. The ideal map would of course be one that is an exact duplicate of the terrain being flown over, but the outstanding features of a course should be accentuated, such as canals, rivers, dams, railroads, etc. Where the country is mountainous a contour map is desirable showing in figures the altitude of the various mountain ridges, so a pilot may know just what altitude is necessary to clear them. The new Airway strip maps are being made to show all these landmarks, and should prove of inestimable value as they embody the most valuable recommendations of the Airways pilots. It is planned to map the entire United States in the same manner.

THE problem of placing markers along a route, so as to be of the maximum value to pilots is still in the experimental stage. Along the Model Airway there have been 106 towns marked with the name of the town, and with an arrow to assist the pilot to orientate himself. These have been marked by the Air Service, and have proven of inestimable value, particularly in bad weather when a pilot must fly around storms or over clouds for a considerable period. Emergency landing fields along this route have been located approximately twenty-five miles apart, and are marked

with a white circle fifty feet in diameter and four feet in width. These were marked after obtaining the owner's permission, and considerable convincing talking and explaining were necessary in many cases before obtaining the owner's consent. Whenever fields are located within city limits they are usually very hard to locate from the air, particularly for strange pilots, and it is recommended that the edges of the runways used be outlined in white crushed stone, refreshed occasionally with white-wash or some similar compound. This method is used on the new Air Mail Field at Chicago and makes a splendid landmark, besides adding to the attractiveness of the field.

TO avoid confusing a pilot leaving McCook Field, and to get him started right on his course, with a corrected compass reading, a series of crossed arrows have been painted on the roof of a hangar with the name of the town toward which they point painted on the cross bar. These are further supplemented by other arrows or prominent landmarks at some short distance away easily visible from the first arrow. By flying a course over, and in the direction of these arrows, or course marks, the pilot will get the exact compass reading to carry him on his true course. This method of lining up on two markers eliminates the reckoning of drift, deviation, etc., and has worked out splendidly. The markers have also been placed on the field and on the sides of hills at Moundsville. They

are not expensive to make and once outlined their upkeep is very small, considering their value to the pilot.

National highways are easily followed from the air, although after considerable automobile traffic has passed over them, the color of the roadway becomes darker, and they are not very visible when flying in inclement weather. However, the fences which are usually painted white along these highways show up exceedingly well, and enable a pilot to easily pick up the national and state highways after they leave the various towns. This is very important in order to avoid confusion, and as the white fences are easily seen in bad weather, they should be kept freshly painted.

FOR night flying the automobile headlights on well traveled highways show up very well, particularly if the roads are new and white, as some of the light is reflected upward. The lighting of national highways would serve a twofold purpose, being of help to both the automobile driver, and the airplane pilot. Night flying beacons of the revolving type have proven very successful for keeping a pilot on his course, and these supplemented by the flashing type of gas beacons or electric boundary lights placed in each corner of the emergency landing fields en route, constitute the best type of markers for night flying that have been developed. Illuminated wind cones, and Ts to give the wind direction and velocity are still in the experimental stage, but some promising, and very visible types, have been developed.

When the various towns and fields are marked so as to make cross-country flying easy, and the proper maps are available for use, it will be a great step toward universal flying. This ground development has lagged behind the perfection of the airplane, but is rapidly catching up, and were it possible for all communities to mark the name of their towns, cross-country flying would increase enormously. Pilots lose enthusiasm and confidence after enforced lay offs due to other duties, but the interest in cross-country flying is rapidly increasing and when properly mapped and marked Airways are available, pilots are quick to take advantage of it. This is evidenced by the increased number of flights over the Model Airway from Dayton to Washington where aerial traffic has increased from twelve planes in June, 1922, to 224 planes in the month of May, 1923.

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The four U. S. Air Services officers who have been named by General Patrick to pilot planes in the round-the world flight of the Douglas World Cruisers are Major F. L. Martin of Chanute Field, Rantoul, Ill., and Lieutenants Leigh Wade, formerly of Dayton, Lowell H. Smith of San Diego, Calif., and Erik Nelson of McCook Field. Lieutenants Leslie P. Arnold of Bolling Field and L. D. Schultz of Selfridge Field have been named alternates.



What lies beneath the clouds?

Above the clouds, the weather is always splendid. Sun-drenched, the snowy ranges reach away unendingly. One must plunge into a glorious cloud peak to realize its nothingness—fog of the streets.

Pleasures of the upper air are matched by its perils—unless the flyer has before him an accurate picture of the shrouded ground. Engine trouble may force a landing at any time. Then, checked by his instruments, the careful flyer will know his position relative to the nearest landing field—*shown on his map*—and direct his glide accordingly.

In emergency or precisely planned maneuvers, officers of the United States Army Air Service use RAND McNALLY Maps because of the invariable accuracy which everywhere has made "RAND McNALLY" the synonym for "maps."

RAND McNALLY & COMPANY
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Dept. A-89

536 S. Clark Street

Chicago

The Bombed Torpedo

By C. G. Grey

(Reproduced from *The Aeroplane*, England)

PERHAPS the most joyous of the Constantinople stories is that of the bombed torpedo. It all began with the R.A.F.'s own little Pageant at Constantinople, which was gotten up to impress Allies and potential enemies alike, and it is concerned chiefly with an officer who is very keen on Army Co-operation. His pet game is picking up message-bags from the ground. The method is the standard one intended to be used in the field.

Two rifles are stuck upright on their bayonets in the ground. A string is stretched between them and on that string is hung a bag containing the message intended for the R. A. F. The co-operating airplane seeing the signal swoops down between the rifles and with a specially arranged snap-hook slung under the machine catches onto the string complete with bag and goes aloft, where the pilot or observer hauls the bag into the cockpit through a hole in the bottom of the fuselage. It sounds quite simple but a certain amount of skill and judgment are necessary to catch the string without hitting the rifles or missing the whole outfit.

It was arranged that a demonstration of this sort should be given at the Pageant aforesaid and this particular officer was detailed to give it. The rifles, or posts in lieu thereof, were duly fixed where they could be seen by the Great Great Ones, who included the largest brass hats of the Navy as well as the mere Army and R. A. F. folk.

The pilot on his pet Bristol Fighter (locally called a "Brisfit," as explained hereinbefore) started down the far end of the aerodrome and everybody expected him to go straight up and then do a graceful dive for the string. But that was much too simple for him on such a day. He went up straight enough, but much more steeply than seemed necessary. And at some few hundreds of feet he looped the loop, with becoming gract. And then he did another loop and another and another and another all nicely in line. And the bottom of the fifth loop brought him accurately in line with the message bag which he took in his stride, so to speak, and carried skyward as he finished his loop.

Even the most hardened of the R.A.F. people were pleasantly surprised at the performance. The rest of the spectators were frankly amazed. The Navy were so astonished that it actually struck some of them that this message-bag trick might be useful at sea. So after it was all over the pilot was asked whether he would care to try picking up a bag from a ship instead of from the ground.

Naturally he agreed to try. So a bag was strung between the masts of a battleship and he, flying from his aerodrome ashore, removed it with ease and neatness. Then it occurred to the Navy that though the trick looked so easy a less skilful pilot might by ill-hap try to remove the ship's wireless aerial instead of the string and the bag. So it was suggested that two masts to carry the bag might be erected on one of the ship's boats which could be towed behind the big ship.

This was duly done. The pilot flew out from shore, removed the message and returned with it to his aerodrome. It was a very pretty feat considering that a ship's boat is by no means such a steady mark as is the ship herself. And

after that the pilot went aboard the big ship to discuss the picking-up of messages as a working proposition.

In the Ward Room the Navy was complimentary and as usual became argumentative. The Air Force to keep its own end up also became argumentative. Ultimately the Air Force in desperation propounded the proposition that the chief usefulness of Naval personnel was to navigate aircraft-carriers for the R.A.F.—or something of that nature. Whereupon the enraged Navy asked the Air Force what it proposed to do about it when a destroyer came along and torpedoed the unarmoured and practically unarmed carrier? Said the Air Force in effect,—“Who cares about your comic destroyers? We shouldn't even bother about sinking the destroyer, we should merely bomb the torpedo!”

That was a trifle too much for the Navy's stomach and the Air Force was taken at its word. It was told that if it wanted to try to bomb a torpedo it could have a shot at it, and that when it had failed perhaps it would be less cocksure about itself. So representations were made to the Great Great Ones R.N. and they consented to organize a show-down or a show-up, whichever way one looked at it, for the Air Force.

In due course the big ship put out into the Marmora, representing a gunless carrier. A destroyer also put out, representing the attacker. The pilot aforementioned took off from his aerodrome on his pet "Brisfit" which half-a-dozen small, very-much-alive bombs under his fuselage and flew round the big ship, representing the supposititious carrier's defensive deck-flier.

The destroyer fired a full-sized service torpedo, minus only its war-head, at the big ship and made very good shooting of it. The pilot watched the bubble-track of the torpedo and when it was half-way to the ship he made his dive at it, pulled the plug, and loosed his full salvo of six bombs slap on top of the tin-fish. The torpedo dived in a young waterspout, disappeared for a few anxious moments, and then its nose appeared pointing pathetically skyward like a baby whale sitting on its tail and begging. There it sat till the Navy lamenting sent out a boat to tow it home. And the pilot returned to his aerodrome humbly rejoicing.

The cream of the joke was not vouchsafed to the Air Force till it leaked out that before this little event the Navy in that area had already expended its Admiralty allowance of practice torpedoes and that in order to call the bluff of the R.A.F. and in order that the horn of the Navy might be exalted and in the certainty that no mishap could occur the Navy had used for the demonstration a perfectly good new torpedo out of its war stores. And as the victimized torpedo was somewhat badly bent this meant that the Mediterranean Fleet was thereafter under its proper complement of torpedoes till the end of the financial year.

After that without loving the R.A.F. any more dearly the Navy had considerably more respect for the Air Force and when the officers of the two Services met in messes and clubs there was a distinct tendency on the part of the Navy to accept the Air Force as men if not as brothers. But it is sometimes undiplomatic to talk in a Ward Room about bombing torpedoes.

Ninth Annual Report, National Advisory Committee for Aeronautics

(SYNOPSIS)

The report outlines the organization of the Committee for co-ordinating and directing the scientific study of the problems of flight. It discloses an interesting organization, comprising an Executive Committee and three standing technical sub-committees that meet periodically. It appears that not only do the twelve members of the main Committee serve without compensation, but the members of the subcommittees serve as such without compensation. The membership of the sub-committees, like that of the main Committee, comprises Army and Navy officers, engineers, and scientists from private life, and representatives of the Bureau of Standards and the Langley Memorial Aeronautical Laboratory.

Co-operation of Army and Navy

The report discloses that the Army and Navy Air Services co-operate freely with the Committee; in fact, that many of the items of scientific research conducted by the Committee units own laboratories at Langley Field, Virginia, are undertaken at the request of the Army or the Navy.

Scientific Analysis of Airship Plans

The report shows that the Committee made a careful analysis of the plans and specifications of the Navy rigid airship U. S. S. SHENANDOAH (formerly the ZR-1), and is now engaged in making a similar investigation and study of the Army semi-rigid airship RS-1, now in course of construction at Akron, Ohio.

People Showing Interest in Technical Investigations

The annual report contains full reports of the standing technical Committees on Aerodynamics, Power Plants, and Materials for Aircraft, showing in detail the technical progress made during the past year, which will be reflected in the design and construction of better airplanes within the next year or so.

A brief description of the results of all fundamental aeronautical research is embodied in the synopsis of the technical publications issued by the Committee during the past year.

As evidence of the increasing general interest in the study of the science of aeronautics, the report of the Committee's Office of Aeronautical Intelligence shows the distribution of 15,262 technical reports, 10,036 technical notes, 2,262 technical memorandums—all issued by the National Advisory Committee for Aeronautics—and 9,310 miscellaneous technical papers secured from all parts of the world. The Committee received 2,956 individual written requests for technical information, in addition to innumerable telephone requests, and a total of 18,514 reports of all kinds were forwarded upon request.

Fundamental Purposes of the Air Mail Service

The report contains a complete statement of the fundamental purposes of the Air Mail Service, submitted to the late President Harding at his request. In this respect the report states:

"The National Advisory Committee for Aeronautics at this time reiterates its faith in the value to the Nation of the Air Mail Service as a practical means for aiding the development of commercial aviation, as well as a means for expediting the transportation of the mail. We cannot shut our eyes

to the future. Mail is bound to be carried eventually by the fastest means available, and it is safe to say in this age of progress the American people will demand a more or less general use of aircraft in the near future for carrying the mails.

"The National Advisory Committee for Aeronautics strongly recommends the granting by Congress of liberal appropriations to the Air Mail Service, sufficient to enable it to—

"(a) Demonstrate that night flying is practicable over a regular route and schedule. This includes development of a chain of emergency landing fields, adequate lighting for night flying, improved methods of navigation through fog, storm, and darkness, and a specially trained personnel.

"(b) Bring about the development of an efficient type of airplane for this special purpose, as distinct from military purposes, and perfect methods for protecting the mails from damage by fire or crash."

Helium a National Asset

Discussing the question of helium for airships, the report says:

"During the past year, for the first time, service airships have actually been inflated with helium. The Navy rigid airship U. S. S. SHENANDOAH, and a number of Army non-rigid airships are now using helium. The improvement in the method of its extraction, referred to in the Committee's report of last year, has materialized, and when further perfected will permit the production of helium at a much lower cost.

"Gases carrying helium in amounts adequate for quantity extraction are found only in the United States. This exclusive possession constitutes a unique national asset which should not be dissipated. Even if any large scale production of helium be not undertaken at this time, America should conserve this existing natural resource. The National Advisory Committee for Aeronautics, therefore, strongly recommends that Congress provide for the acquisition and sealing by the Government of the largest and best helium fields."

WHAT IS HOLDING BACK COMMERCIAL AVIATION— NECESSITY OF GREATER APPROPRIATIONS TO MAINTAIN ADEQUATE AIR SERVICES IN ARMY AND NAVY

Relation of Aeronautical Research to National Defense

Despite the progress that has been made in aeronautics, no one at this time can safely predict its future or its limitations, either for purposes of war or commerce. As to our national defense, the programs of the Army and Navy are subject to change from year to year and are dependent in large part upon the progress of aviation. And the progress in aviation is in turn dependent upon aeronautical research. The fact that the limitation of armaments conference placed no limitation on the development of aeronautics for military purposes assures its greater relative importance in future warfare, whether over land or sea.

With the increase in expenditure in the maintenance of the military and naval air services, especially in view of the aggregate cost of new types of aircraft, it is more than ever

necessary that fundamental information should be available on which proper design of new aircraft is based. The Army and Navy rely upon the National Advisory Committee for Aeronautics for the fundamental aerodynamic information requisite for the design of military and naval aircraft.

To keep pace with military developments abroad as well as to hasten the day of practical commercial aviation in this country, more knowledge is necessary on the fundamental problems of flight. The committee from year to year has carefully prepared its research programs, but has invariably had to modify or delay its execution for lack of funds. The committee feels that the curtailment and postponement of its research programs mean the denial to the American people of knowledge necessary for the substantial development of aviation, civil and military, even though liberal appropriations be made, as they should be, for the Army, Navy, and Postal Air Services.

The committee appreciates the need for economy in Government expenditures at the present time, but the continuous advancement of aeronautics places heavy demands upon the committee for new knowledge, which can be obtained only by the conduct of scientific research. The committee believes that the development of aeronautics will promote our national welfare, increase our national prosperity, and make secure our national defense. When considering the costs involved, it should be considered that scientific research is the best insurance obtainable to prevent waste of funds through the design and construction of aircraft which are not suitable for the purposes intended. The air services of our Army and Navy are not so large as those of other world powers, but we are gradually forging ahead of other nations in our knowledge of the scientific principles underlying the design and construction of aircraft, and in this important respect at least we are providing against unpreparedness in the air.

Conclusion

During the past year there has been a gratifying increase in knowledge of the science of aeronautics, as fully described in the reports of the technical subcommittees and in the various publications of the National Advisory Committee for Aeronautics. A year or more must usually elapse before the results of fundamental research become evident in the construction of better aircraft. Justification of the policy of continuous prosecution of scientific research is reflected in American achievements of more popular interest during the past year, among which may be mentioned:

(a) The five-day test demonstration by the Air Mail Service of the practicability of night flying of the mails, resulting in the transportation of mails across the continent in both directions in from twenty-seven to thirty hours.

(b) The completion of the first rigid airship to be built in America, the Navy fleet airship U. S. S. SHENANDOAH, formerly known as the ZR-1, which has successfully passed the preliminary tests and which promises, under careful handling, to furnish reliable information as to the safety and practicability of airships in warfare using helium instead of hydrogen, and which may serve to open up a new era in air transportation and establish a new industry in America.

(c) The winning by the American Navy, in international competition, of the Schneider cup for naval seaplanes, when an American naval seaplane made a speed of 177 miles per hour, which was twenty miles per hour faster than the nearest competitor of any other nation, and thirty-one miles per

hour faster than the speed of the winning British seaplane of the year before.

(d) The non-stop flight by the Army Air Service across the continent from coast to coast, or 2,520 miles, in twenty-seven hours, in the Army Transport T-2 airplane in which the Army had previously established the endurance record of thirty-six hours.

(e) The establishment by the Navy in the Pulitzer trophy contest of a new official world's airplane speed record of 243.67 miles per hour over a four-lap triangular course of 200 kilometers, an increase of 37.87 miles per hour over the winning speed of the year before; and the subsequent establishment of a record of 266.6 miles per hour over a straightaway course of three kilometers.

(f) The remarkable demonstration of popular interest in aeronautics on the occasion of the annual air races held in St. Louis, October 4 to 6, 1923, when, according to reliable reports, 150,000 people attended and 300,000 miles were flown in connection with the meet without casualty.

These visible evidences of progress during one year compel recognition of the fact that America, although spending less money on aviation and maintaining smaller air services in the Army and Navy, is nevertheless abreast of other nations in the physical development of aircraft. There has, however, been but little application of existing knowledge of aircraft, or air navigation, to commercial purposes. Broadly speaking, the situation with reference to the lack of commercial flying may be summarized as follows:

(a) Only when reliable services at reasonable cost can be given will American business men be ready for commercial aviation. Progress must be gradual. It must rest upon a sound economic basis. Despite the remarkable physical development of aircraft, the present high cost factor, combined with the absence of improved national airways, constitutes an economic barrier to the general application of aviation to commercial purposes.

(b) There has been no Federal legislation and but little State legislation to encourage the development of commercial aviation.

The continuous prosecution of scientific research on the fundamental problems of flight by the National Advisory Committee for Aeronautics, and the systematic collection and dissemination of technical information from all parts of the world, assure progress in the development of aircraft. Although necessary, these activities alone are not sufficient to assure the early introduction of aviation into commercial pursuits generally.

Costs must be reduced, but to accomplish this the development of commercial aviation should be given greater encouragement than it now receives from the Government. The present ten-year aircraft building program of the Army Air Service and the five-year program of the Navy will, if carried out, meet the absolute needs of the two services, and possibly serve to keep in existence a nucleus of an industry until a strong, self-supporting commercial aircraft industry develops.

While there is serious question as to whether commercial aviation can or should be permanently maintained by the Federal government, it is certain that it cannot get an early start without assistance. The practical development of aviation in America will not be realized until the Government gives intelligent support and effective aid, principally by regulating and licensing and by co-operation with the States in the establishment of airways and landing fields. The Committee accordingly reaffirms its oft-repeated recommenda-

tion for the establishment of a Bureau of Civil Aeronautics in the Department of Commerce.

The committee also strongly recommends liberal appropriations for the development of aviation in the Army and in the Navy. At the present time the Army Air Service is equipped largely with obsolete war-time airplanes and engines. These aircraft are being rapidly exhausted, and at the present rate of appropriations the supply of equipment will become more inadequate each year. The Navy is also confronted with a serious shortage of aircraft. Bombing exercises have taught the lesson that aircraft is absolutely necessary for mobile coast defense, and that a navy without adequate aircraft will be at a hopeless disadvantage in future warfare. Major warships are being equipped with aircraft, but at the present rate of appropriations, after making due allowance for necessary replacements, the fleet will not be equipped with the proper proportion of aircraft.

Whatever may be the demands of economy, serious consideration must be given to the increasing relative importance of aircraft in warfare and funds appropriated to equip and maintain adequately the air services of the Army and Navy. Progress in aeronautics is being made at so rapid a rate that the only way to keep abreast of other nations is actually to keep abreast, year by year, never falling behind.

N. A. C. A. SENDS LETTER TO PRESIDENT LETTER OF TRANSMITTAL

National Advisory Committee for Aeronautics,
Washington, D. C., November 23, 1923.

Mr. President:

During the past year there has been remarkable progress in aeronautical development. A speed of four and one-half miles per minute has been attained and new records made for airplane endurance and economy of operation. The air mail service, by flying through the night on schedule, has demonstrated that, as soon as authorized, a regular transcontinental mail service within thirty-six hours can be given the American people. The cumulative evidence of aeronautical progress since the Armistice would, if fully appreciated, stir the imagination of far-seeing people, especially American business men, for air navigation as an improved means of transportation is destined to become as revolutionary and as indispensable as the automobile.

The airplane, however, is also becoming a more vital implement of war. Aviation will be the first branch of either the Army or the Navy to come into action in the future, and supremacy in the air will be practically essential for ultimate success. With this in mind, and recognizing the need for retrenchment in governmental expenditures generally, it is the judgment of the National Advisory Committee for Aeronautics that it is unwise economy to withhold from the air services of the Army and the Navy the funds necessary for their development and for their adequate equipment and maintenance.

Respectfully submitted,

National Advisory Board for Aeronautics,
Charles D. Walcott, Chairman.

The President,
The White House,
Washington, D. C.

PRESIDENT'S LETTER TO CONGRESS

On December 10, 1923, the President sent to Congress a message which read in part as follows:

"The attention of the Congress is invited to the conclusion of the National Advisory Committee's report, which contains constructive recommendations for the advancement of aeronautics, civil and military. I wish especially to endorse the recommendation of the National Advisory Committee for Aeronautics for the establishment of a Bureau of Civil Aeronautics in the Department of Commerce. I concur in the Committee's views as to the necessity of scientific research and the importance of providing for continued development of military and naval aviation if America is to keep abreast of other nations."

A recent letter addressed to the President by Dr. Charles D. Walcott, Chairman of the National Advisory Committee for Aeronautics, states that "air navigation as an improved means of transportation is destined to become as revolutionary and as indispensable as the automobile."

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

3341 Navy Building, Washington, D. C.

Charles D. Walcott, Sc. D., Chairman, Secretary Smithsonian Institution, Washington, D. C.

David W. Taylor, D. Eng., Secretary, Washington, D. C.

Joseph S. Ames, Ph.D., Chairman, Executive Committee, Director, Physical Laboratory, John Hopkins University, Baltimore, Md.

George K. Burgess, Sc.D., Director, Bureau of Standards, Washington, D. C.

William F. Durand, Ph.D., Professor of Mechanical Engineering, Stanford University, California.

Jerome C. Hunsaker, Commander, United States Navy, Bureau of Aeronautics, Navy Department, Washington, D. C.

Charles F. Marvin, M. E., Chief, United States Weather Bureau, Washington, D. C.

Lawrence W. McIntosh, Major, United States Army, Chief, Engineering Division, Air Service, Dayton, Ohio.

William A. Moffett, Rear Admiral, United States Navy, Chief, Bureau of Aeronautics, Navy Department, Washington, D. C.

Mason M. Patrick, Major General, United States Army, Chief of Air Service, War Department, Washington, D. C.

S. W. Stratton, Sc.D., President, Massachusetts Institute of Technology, Cambridge, Mass.

Orville Wright, B. S., Dayton, Ohio.

THE DUKE OF SUTHERLAND recently called upon President Coolidge at the White House to discuss the plan of a possible conference for the limitation of air armament. The result of the conference shows that neither the Duke nor the President is very enthusiastic about advocating such a plan now, especially since France who "rules the air," refuses to turn even a serious ear to the idea.

Spending Money for Battleships Is Waste

By Milton Bronner

THE money America, Great Britain, and Japan are spending for the completion of superdreadnaughts allowed under the Washington conference is a wicked waste of money.

The day of the battleship is definitely over.

This in a nutshell is the opinion of Admiral Sir Percy Scott with whom I had a long talk.

Sir Percy is one of the most distinguished of British naval men.

When the great war broke out, he came out from his retirement, was made a member of the board of inventions, became adviser to the admiralty on gunnery matters, was made head of the anti-submarine department, and, just by way of a little extra work, took charge of the defense of London from air attacks.

"The future," said Sir Percy to me, "is with aircraft and the submarines. The day of the swanking battleship is done. In your country, in Japan, and in mine there are two classes of people who are especially fighting for battleships:

"First—Those who make big money out of building them for the government, or from supplying the materials.

"Second—The senior officers in the navies. They know that if battleships were definitely discarded and if navies simply consisted of fast destroyers, submarines, and airplane carriers, there would be no room for a lot of senior officers. They would be jobless.

"There was a time when battleships could cruise all over the seas, destroying everything they met smaller

than themselves. They could blockade an enemy's coast, destroy coaling stations, bombard enemy docks, towns, and fortifications.

"But the last war showed the development of the submarine. And since the war ceased there has been a tremendous development of aircraft.

"The result of these new developments is that a battleship today is a liability rather than an asset.

"If within reach of enemy submarines, she can't go to sea by day unless surrounded by destroyers. If within reach of enemy aircraft, she can't go to sea by day unless accompanied by an airplane ship to guard her from air attacks. At night she runs the double risk of being sunk by submarines or torpedo boats.

"I can't understand the American secretary of the navy saying battleships are still the main reliance of fleets and Theodore Roosevelt saying they are the backbone of the fighting forces afloat. And our own First Lord of the admiralty saying they are the spearhead of our fleet. Under the new conditions of naval warfare, this is sheer claptrap nonsense. I can't understand such bosh being swallowed by your congress and our parliament.

"You couldn't send your battleship fleet across the ocean against either us or Japan in case of war and vice versa. The submarine and the airplane have given nations, even the small ones, effective methods of defense against aggression. So in a way, the new engines of war are instruments of peace because they make it harder for nations to use the sea as a highroad for the making of war."

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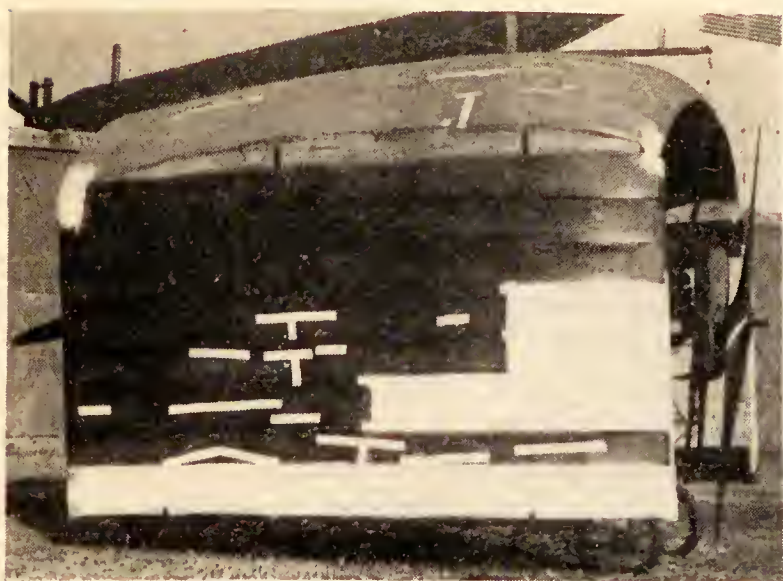
A meeting of leading U. S. Civil and Military Aeronautical officials is being planned for the third national aero congress and air institute to be held in conjunction with the International Air Races scheduled for Dayton, Ohio, in October. The aero congress will represent a national convention of N. A. A. members. The national air institute will comprise an embodiment of members of the Aeronautical Chamber of Commerce, National Advisory Committee for Aeronautics, National Aeronautical Association, Society of Automotive Engineers, and the American Society of Mechanical Engineers.

With the use of the aerial camera it has been found possible to discover the boundaries of old Celtic fields in England, which are otherwise invisible when viewed from the ground. This new use of the airplane and equipment bids fair to aid archaeologists greatly in their excavation projects, since by this means they can locate the actual location of buried ruins.

During the program of the seventy-fifth annual meeting of the American Association for the Advancement of Science held at the University of Cincinnati from December 27 to January 2, Dr. Henry Fairchild, professor of geology of Rochester University, discussed a project planned to use airplanes in an expedition to Panama to discover a tribe of blond savages who are reported to dwell in a remote section of this region. These Indians were first reported by R. C. Marsh, American engineer, who discovered them some months ago. Airplanes will aid in transporting the party to the remote jungle, while it is proposed also to drop gifts to the strange warlike people in order to gain their friendship.

Colonel and Mrs. Deeds, well known personages in air circles, recently entertained guests at Moraine Farm, Dayton, Ohio, in honor of executives of McCook and Wilbur Wright Fields, the flyers who made world's records during the year, and the members of the official staff of timers, and officials connected with these events.

A FUNNEL SHAPED HELICOPTER



Above is shown a new type Helicopter, recently completed by the inventor, J. H. Lynch, who has been working secretly on this device for some time. The Helicopter is shaped somewhat like a tunnel and is equipped with two 200 H. P. motors, one at each end. The whirling propellers are expected to provide sufficient suction under the canopy to force the machine up into the air. This principle of flying is somewhat similar to that employed in lighter than air machines.

British Flyers are attempting to beat the U. S. flyers on the Round-the-World cruise with airplanes. It is announced that early next spring a world circling expedition will start from England.

All preliminary plans have been completed and A. Stuart MacLaren, the British ace, has been named to command the squadron of Vickers-Viking amphibian planes. The English expedition will follow an eastern route first to France, thence to Egypt, Mesopotamia, Persia, India, Burma, China, Japan, Aleutian Islands, Canada, and across the Atlantic to the home airdrome.

The British Air Ministry hopes that this journey can be made in three months with a consumption of but ten actual flying days. The officials of the U. S. Expedition have placed five months as a low estimate of time in making the Round-the-World journey, although it is generally contemplated that the trip may take even more time.

A report comes from Copenhagen to the effect that the Soviet Government has ordered 500 more Fokker planes from the Dutch manufacturer.

Dayton is taking early precautions in having everything in "ship shape" for the great International Air Classic to be held in this city next October. Plans for building new road surfaces leading to the great air field east of the city are well under way with the recent resolution passed by city and county commissioners in favor of such improvements.

Lieutenant Commander Robert R. Paunack, of the Pacific Fleet Air Forces has been assigned to take charge of the naval headquarters at the Engineering Division, Air Service, McCook Field, to succeed Lieutenant Commander Karl Smith, who has received orders to participate in the Panama war maneuvers of the U. S. Fleet.

No less than one hundred U. S. Ships, which comprise sections of both the Atlantic and Pacific Ocean squadrons have departed for the Caribbean Sea for the annual war maneuver activities at this point. The combined fleet, which forms the greatest armada ever assembled under the American flag included eighty-seven airplanes, one airplane tender, and one airplane carrier. The fleet is commanded by Admiral Robert E. Coontz.

Lieutenant Guy Kirksey, of Wilbur Wright Field has returned from Camp Bragg, N. C., where he has been assisting in aerial photographic work in conjunction with maneuvers of artillery troops.

Wilbur Fagley Field Placed on Transcontinental Route

Wilbur Fagley Field, Kokomo, Ind., a modern flying field, with its giant white cross and circle beckoning the itinerant airmen to 100 acres of safety and a chance to stretch his legs, gas up and smoke a "pill" before winging his way, has again been honored by being placed on the government maps as a field bearing the stamp of approval of the U. S. Government. This time Fagley Field was placed on the transcontinental route, on the branch from Detroit to San Francisco, by way of St. Louis, through the recommendation of Major General Mason M. Patrick, Chief of Air Service.

The Kokomo Field has for some time been on the Model Airway, being the intermediate stop between Chanute and Selfridge fields on that route. With this recognition, the local air service authorities hope that Kokomo will soon be made a landing place on the Air Mail routes, as the field is well equipped to take care of this service.

MARINE OFFICERS COMPLETE LONG FLIGHT



Above are shown the four Marine Corps fliers who, on November 28, started from Washington for the return flight to Haiti. These intrepid fliers started the return flight from Haiti and proceeded to Washington, St. Louis, San Francisco, and back to the capitol. Their return to Haiti completes a trip of 10,953 miles. Left to right in the photo are: Lieut. H. O. Rogers, Lieut. H. D. Palmer, Sergeant B. F. Belcher, and Sergeant P. P. Tolusciak.



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day of the month.

Fred F. Marshall Editor

The French Air Ministry suffered the greatest catastrophe in the history of aviation with the destruction of the giant rigid dirigible, Dixmude, which fell into the Mediterranean Sea with the loss of its crew of fifty men.

The Dixmude, a German made Zeppelin, was built during the war and turned over to France as an item on the reparations program. It was classed as the largest military airship in the world.

The Dixmude, with its crew of nine officers and forty-one men left the Guers-Pierrefue airdrome December 18 for an extended cruise of seventy-two hours. After crossing the Mediterranean and visiting Algeria and Tunis, she turned her nose homeward, expecting to return to the home station, but a wireless message was issued to the commander warning him not to attempt a crossing of the Mediterranean due to the presence of a terrific gale which was sweeping over a great portion of the sea.

From this time all official connection with the Dixmude was lost, although unconfirmed reports stating that the big ship had been seen, came in for the next ten days from various scattered points, while airplanes and ocean vessels made an exhaustive but futile effort to gain some trace of the ill-fated airship.

The tragic fate of the Dixmude was revealed December 28, when the French Marine Ministry officially announced that the body of Lieutenant Commander Duplessis de Grenedan, who commanded the airship, was found by Italian fishermen in the ocean near the coast of Sicily. A few days later a vessel picked up fragments of charred fabric and parts of the wireless aerial which were identified as debris from the Dixmude.

This discovery substantiates the belief that the dirigible was caught in the fury of the gale and later plunged into the sea in flames with all on board.

The loss of the Dixmude is a severe blow to those who stress the value and practicability of the lighter-than-air type of flying machine.

It has led to various adverse comment toward the future plans for exploitation in this type of craft, while some have voiced the opinion that the proposed polar expedition of the U. S. Navy with the "Shenandoah" airship should be abandoned citing the fact that the huge airships of this type are

rendered practically unmanageable in gales of any great proportion.

General G. A. L. Dumont, military attache of the French embassy in this country goes so far as to forecast the end of dirigible building as a consequence of the recent Dixmude disaster, he stating that: "It has been my observation that all of these dirigibles are sooner or later lost." Herr Milatz, noted German Zeppelin constructor, on the other hand blames the "frivolous daring of the French," in fixing the responsibility of the disaster, explaining that the French were too confident of their ability to handle the Zeppelin after their previous short training with the ship.

From all indications, it appears that the Commander of the Dixmude attempted to weather the gale in order to reach the home station, he having no doubt been led to do so through lack of landing facilities at other points.

As for the future of the lighter-than-air craft it is hardly probable that the loss of the Dixmude will have any serious influence in retarding future experimenting with dirigibles. It is hoped that some day dirigibles can be built powerful enough and efficient enough to either weather the gales or fly high enough to get out of the storm strata.

Governor Encourages Flying

The Montgomery Adviser of Montgomery, Ala., recently printed a proclamation issued by the Hon. William W. Brandon, Governor of Alabama, and a member of the American Aeronautic Association, wherein he reviews briefly the tremendous progress that has been made in the science of aviation, and especially its remarkable commercial and industrial utility. He mentions the fact that the development of aerial traffic imposes certain duties and obligations upon States, counties, and municipalities, as well as upon the Federal Government. His proclamation should be of interest to every one, and the following paragraphs from the proclamation are therefore quoted, viz.:

"Now, therefore, I, William W. Brandon, Governor of the State of Alabama, in consideration of the premises and by virtue of the authority vested in me, by this instrument do appeal to the municipal officials and civic organizations of this State to effect the following:

"1. Locate a terrain in proximity to their town or city which can be used and designed as a municipal landing field for aircraft. Such field should be smooth and dry of surface, reasonably level, unobstructed, and in dimensions should not be less than 3,000 feet square; there should be no wires, high trees, fences, or other obstacles surrounding the landing place.

"2. Mark such field with a large white circle of durable material 100 feet in diameter, the band of which should not be less than four feet in width. Paint the name of the city or town on the roof of some prominent building, preferably the railroad station, if there is such, in large letters which will be visible to a height of 3,000 feet in clear weather.

"3. Place a cloth cone, flag, or instrument to indicate the wind direction at the edge of the field."

Is Aviation Progressing?

Read these news items clipped from aeronautical publications of ten and twelve years ago and judge for yourself.

A World Record

“A new world record for time in the air for five persons was made at Munich, Germany, on February 20, when the aviator Rentzel made an ascent with four passengers and remained in the air 21¾ minutes.”

—Fly Magazine, Issue of April, 1912.

Note: Airplanes of today are able to carry comfortably quartered as many as a dozen passengers with baggage and remain in the air several hours.

Speedy Cross-country Flight

“A new cross-country record was established by Maurice Tabuteau on a Morane-Saulnier monoplane, equipped with a 50-h. p. Gnome engine on March 11, when he flew from Pau to Poitiers, France, a distance of 261 miles in 2 hours, 35 minutes.”

—Fly Magazine, April, 1912.

Note: Compare this record with such modern flights as that of Bradley Jones and Lieut. Alex Pearson who on January 18, 1923, flew from Dayton, Ohio, to New York City—a distance of 592 flying miles in 4 hours and 3 minutes, constituting an average speed of 150 miles an hour. In February, 1923, Lieut. Hegeberger with Observer Pilot M. C. Short flew from Dayton, Ohio, to Langley Field, Hampton, Virginia, in 3 hours and 44 minutes. A few months later Lieut. C. C. Moseley made a trip across the continent in 28 hours actual flying time while Lieut. J. A. Macready and Oakley G. Kelly flew the T-2 Air Service Transport across the continent—a distance of 2560 miles in slightly over 26 hours constant flight. Air mail flyers recently conveyed mail across the continent in less time than the flight of the T-2, although several relay stops were made.

Loop-the-Loop!!!

“True to his reputation, the great and only Lincoln Beachey has come, delivered the goods, and gone, and hundreds of thousands of Chicagoans can now say that they have seen a man loop the loop in an aeroplane.

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Up went the nose of the machine; every heart in the thousands lining Michigan avenue and filling Grant

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4	100	375
5	100	515
6	100	659
7	100	816
8	None	865
9	None	920
10	None	1000

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Park quickened, and most of them positively thumped. People held their breath, stood tense and speechless as the nose of the machine turned farther upward.

An instant later and the machine was figuratively 'standing on its tail;' over it went, the sunlight flashing against the upper plane, and then the nose turned downward.

On down it came—there was a quick twist and a long, thankful sigh of relief arose from the mighty crowd; for Beachey, the man-bird, was once more flying along on an even keel. He had looped the loop. The thousands were satisfied. Moreover, they were practically to a man grateful, for prayers for Beachey's safety had been whispered by many."

W. Williamson, Assistant Secretary.
Aero and Hydro, Issue of May 23, 1924.

Lieut. Col. Brabazon, speaking in Parliament, called attention to the fact that Great Britain for three years had had only one-seventh of the air power of France. "Our policy," he said, "was based on a modern phrase which runs 'Yes, we have no bananas!'"

It is quite possible that this expression can find its application to air services other than those of the British Empire.

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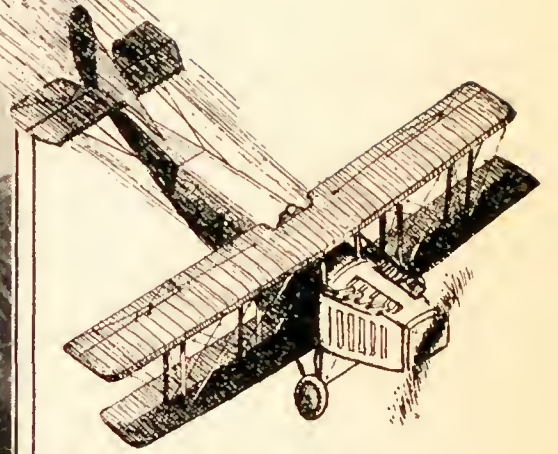
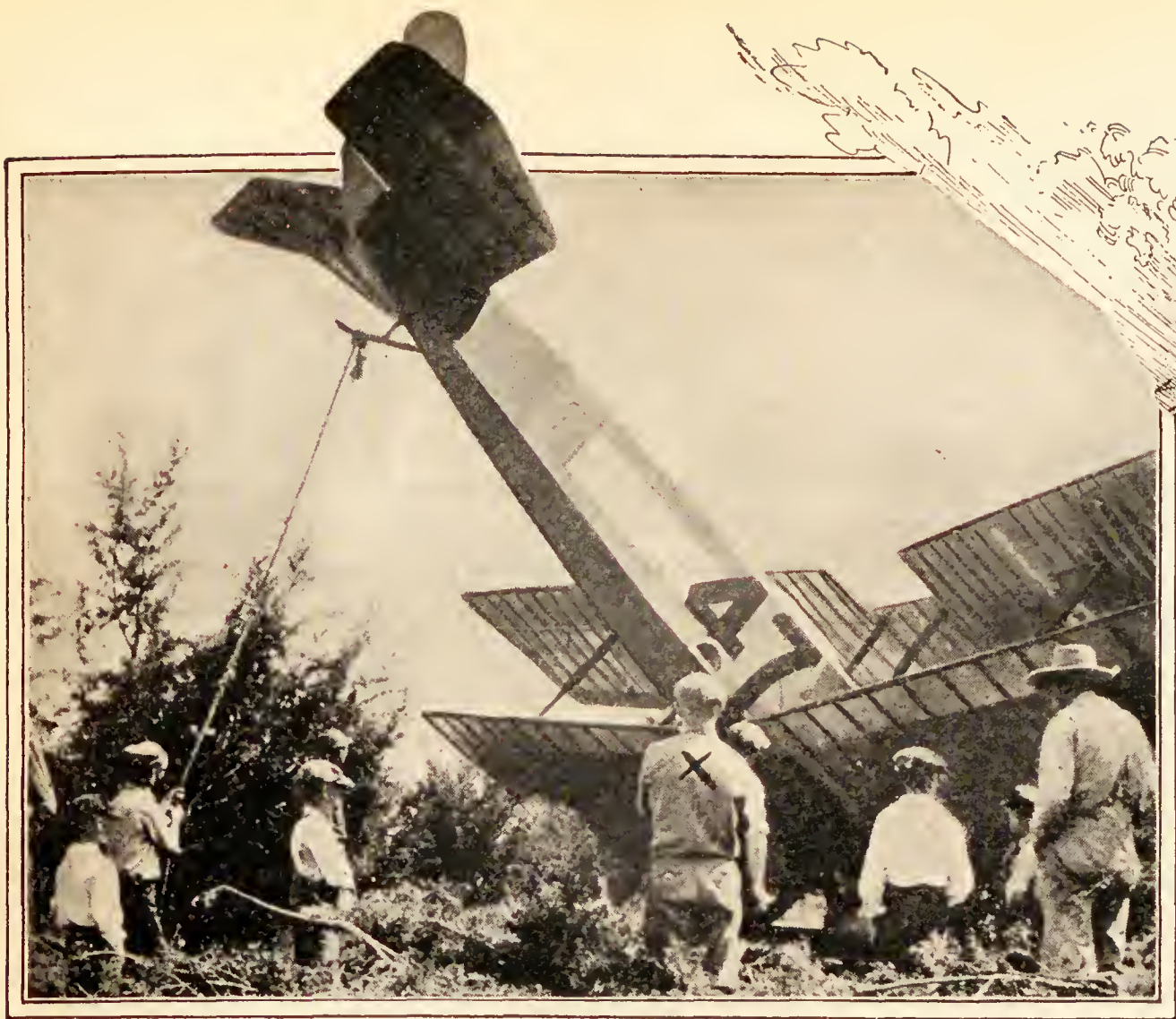
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"Without a single scratch—"

CRASH! The crack of splintering wood! Traveling at a rate of fifty miles an hour, R. W. Mackie of Houston, Texas, felt the landing gear of his airplane drag through the top of a tree. Then his plane swerved downward, smashed through heavy branches and finally came to rest suspended in mid-air.

"But when the trees were chopped down and the plane carefully brought back to earth," writes Pilot Mackie, "it was discovered that the broken propeller was the only damage sustained. Although the plane was held off the ground by the branches of the trees, not a hole was torn in the linen. But the most marvelous thing of all was that not a single scratch showed anywhere on the

plane, although it had crashed through two trees and "roosted" on the third. The hard, smooth surface of the Valspar had met the test without injury."

From his seven years' experience operating airplanes, R. W. Mackie had discovered that "Valspar is far superior to all other kinds of varnish now being manufactured", that it could withstand racking vibration, the salty atmosphere along the Gulf coast, the heavy night dews, the driving rains and blistering heat of Texas. But even he was surprised when it passed this super-test unscathed. Actually, it was merely one more proof of Valspar's amazing resistance and durability in the most difficult situations imaginable.

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Twelfth Observation Squadron Returns From Maneuvers

The 12th Observation Squadron, stationed at Fort Bliss, El Paso, Texas, recently returned to its home station after completion of the First Cavalry Division maneuvers held at Marfa, Texas. During the maneuvers the squadron completed seventy-two hours and five minutes flying and sixty-seven missions, made up of contact, courier, reconnaissance, artillery adjustments, and observation flights for visiting officers and attaches. The terrain on which the maneuvers were held is ideal for aerial observation, it being practically impossible for the concealment of moves by the ground forces. The work by air forces was carried out in a highly efficient manner and received praise from the ground troops. An incident to the maneuvers was a report received by the squadron that an officer and his orderly had been lost for three days, and a request that a ship be sent out to look over the surrounding country to see if they could be found.

Aircraft Squadrons Embarked for Winter Maneuvers

The Commander, Aircraft Squadrons Battle Fleet, and his staff established their offices on board the U. S. S. Aroostook on Monday, December 17. The planes and equipment of the different squadrons were loaded on the U. S. S. Jason, for transportation south. The Jason left San Diego on December 27.

TEST OF DOUGLAS WORLD CRUISERS



Lieut. Erik Nelson with his mechanic, Clarence Haas, discussing performance of Douglas World Cruiser after a flight in the plane from McCook Field, Dayton, Ohio, to Langley Field, Va.

Aircraft Squadrons Battle Fleet Have Ambulance Plane

A DH-4B has been converted into an ambulance plane by the personnel of VO Squadron Two, Aircraft Squadrons Battle Fleet. The following is quoted from a report on the plane. "The completion and test of the hospital ship attracted considerable attention from the station personnel and civilians visiting the station. The ship is attractive in appearance, the fuselage being painted white with a green stripe from the engine section to the tail on either side, and bearing on the fuselage and wings the red cross. The fuselage has been built up to accommodate a stokes stretcher. Passengers carried in this compartment during the tests report that the accommodation is comfortable in flight and landing. There were eight flights made totaling two hours and fifty minutes."

VF Squadron one Completes Gunnery Practice

On Thursday, December 20, VF Squadron One, Aircraft Squadrons Battle Fleet, completed their annual gunnery practice. The Squadron won seven Navy "Es" for the Individual Battle Practice and scored 430 hits in the Formation Battle Practice.

Naval Arctic Program

"All the civilized world must wish the United States navy Godspeed on the great Arctic adventure which is being planned for next summer," says the Detroit Free Press. "From all appearances, it is going to be the most ambitious enterprise of the sort ever contemplated, much less undertaken. The excursion will be in the nature of a hunt for a continent or continents whose very existence science can only surmise. It is hoped, incidentally, and whether or not the enigmatic Arctic continents are located, that this expedition may result in the establishment of a short air route for commercial and mail purposes connecting the northern portions of the eastern and western hemispheres.

"The navy's designs on the unexplored Arctic waters are such as to fire the imagination of the most unromantic of cynics."

Planes Land Safely After Collision in Air

Two F5-Ls, from the Naval Air Station at Pensacola, Fla., collided in the air on December 19, in a fog. Instead of a tragedy, the collision merely resulted in forced landings, and slight damage to the planes, with the personnel unhurt. The planes were commanded by Captain L. G. Merritt, USMC, and Lieut. (jg) J. E. Shoemaker, USN. The plane of Captain Merritt suffered a jammed aileron, and a successful landing was made only by placing a man on the injured wing to balance the plane. Lieut. Shoemaker's plane had a broken wing tip pontoon.

Report of Naval Arctic Air Board to Secretary Denby Announced

The report of the Naval Arctic Air Board was made public by the Secretary of the Navy on December 26. The plan calls for the use of the U. S. S. Shenandoah, two vessels with mooring masts for the Shenandoah, and six planes. The Board recommends that the expedition start as early as practicable, probably in June. The plan is to send two vessels, with three planes each, one to Nome, Alaska, and the other to Spitzbergen, where preliminary flights for aerological observations will be made. When all is ready the Shenandoah will fly to Nome via mooring masts at Fort Worth, Texas; San Diego, Calif.; Puget Sound and Nome; thence northward for the accomplishment of the mission of the expedition. The exploration of the North Polar area should include a systematic search of the unknown region north of Alaska, according to the report.

Commenting on the use of the two vessels with mooring masts for the Shenandoah, the Board's report states: "The vessel at Nome Base may select a lee to which the Shenandoah can come in case of bad weather at the mooring mast at Nome Base, and the use of this vessel may advance the time of the flight considerably. The vessel at Nome can push on to the edge of the ice pack, thus advancing the northern base. The vessel at Spitzbergen will provide a base in case the Shenandoah finds it desirable to continue to Spitzbergen through force of circumstance or to establish a trans-Polar air route."

Summing up the work to be done, the Board comes to the following decisions:

- (a) To carry out a North Polar exploring expedition during the spring and summer of 1924.
- (b) To carry on the exploration as essentially a naval project.
- (c) To use airplanes and a rigid airship (ZR-1) for the actual exploration.
- (d) To use helium gas in the airship.
- (e) That all operations shall be carried on from United States territory as far as possible.

Commander Hunsaker In England

Commander J. C. Hunsaker, U. S. N. (Corps of Naval Constructors) lately of the Bureau of Construction and Repair of the United States Navy Department has been appointed to the staff of the U. S. Embassy in London a fact which will be welcomed by his many friends in the British Aircraft Industry.

Commander Hunsaker is succeeded at the Bureau of Construction and Repair at Washington by Commander H. C. Richardson another American officer also of the Corps of Naval Constructors, who is quite well known in this country.

Fokker DX Establishes New Spanish Speed and Altitude Records

Lieutenant Francisco Escribano of the Spanish Air Force piloting a Fokker DX established two new Spanish records recently. He ascended to a height of 28,530 feet in the altitude test and made a speed of 162 miles per hour on the other test.

The Fokker DX is a monoplane using the veneer covered cantilever wing and the Fokker steel tube construction made famous by the Dutch aircraft constructor. It is equipped with Fokker retractable radiators of the same type used in the Liberty engined C O-4 Corps Observation biplane and in the Round-the-World plane built for the Portuguese government.

This arrangement of radiators when they are retracted into the fuselage reduces head resistance at altitudes where the temperature is low, and at the same time gives considerable warmth to the pilot's cockpit.

For a 300 H. P. Hispano Suiza engined pursuit plane the performance of the Fokker DX must be considered exceptionally high.

Even Pittsburgh citizens feel that their city is not too hilly to prevent them having a municipal flying field. First steps to this end were recently instituted by the city council and the Allegheny county commissioners with the condemnation of a 443-acre tract within the city limits, which according to plans will be developed for an airdrome.

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Fokker Trans-continental Airplane Model on Broadway

A perfect scale model of the famous Fokker U. S. Army Air Service Transport Monoplane T-2, one-thirtieth the size of the actual airplane, is on display outside the lobby of the Criterion Theatre, New York.

This model was built in Amsterdam and shows a vivid comparison between the covered wagon trains of American pioneer days and the newest and swiftest method of travel—by air.

The original T-2 made the first transeontinental non-stop flight this summer, piloted by Lts. J. A. Macready and O. G. Kelly, flying between New York and San Diego, California, covering the distance of approximately 2,600 miles in about twenty-six and three-fourths hours. With the same pilots it also established the World's Endurance Record at Dayton, Ohio, remaining in the air thirty-six hours, five minutes.

This model is of much interest as the models of Stephenson's Steam Engine and Robert Fulton's Steamboat, marking as it does, another step in man's conquering of distance and time.

Air Traffic in Russia

Interesting figures covering operations of the "Deruluft" company for the month of September, which operates the Koenigsberg-Moscow line have been received. They show a remarkable increase of traffic over the preceding period and extra planes had to be added for service in both directions. Paying passengers have increased eighty percent. During the whole year there was only one forced landing through a faulty oil connection and NO injury or damage to either passengers, freight, or planes. The 100% safety figure has again been attained. This line is 750 miles long and is the longest route in the world regularly traversed in one day by one machine and one pilot. Two stops are made en route. The normal flying time is about eight hours. The country on this route is very unfavorable for flying; extensive swamps and hills, exceptionally sharp winds and rough weather are common.

The traffic of the Deruluft on the Koenigsberg-Moscow service during the period May 1—August 1 was as follows. Number of flights: 78. Distance flown: 99,000 kms. No. of passengers: 184. Freight: 10,700 kgs. Max. number of machines in service: 9.

Dutch Commercial Air Lines to Expand This Spring

An announcement of new air routes was made recently by the Royal Dutch Air Service. This company, which has operated planes between Amsterdam and London and Amsterdam and Paris since 1920 with a safety percentage of 100%, will commence a new service early in the spring. Ten passenger planes of a late type will fly on a daily schedule between Amsterdam-Hamburg and Copenhagen, thus making it possible for passengers to go to Denmark from London by air in perfect safety and comfort in one day.

Improvements at Wheeler Field, H. T.

The Wheeler Field utilities department has been working steadily to improve the area. A large plot has been planted in grass which is taking hold and spreading rapidly. Arrangements have been made with the Forestry Service for a large assortment of plants and small shade trees, which will be obtained and set out in the near future. It is believed that by the end of the approaching rainy season a vast improvement will be very evident in the appearance of the field.

The new aerial gunnery range, located on the southern extremity of Wheeler Field, has been completed and is now being fired on almost daily. The range consists of three sets of targets constructed of concrete. One section is a trench system, another is a three-ship formation in silhouette, and the third section depicts a railroad, railroad station, and ammunition dump.

The Post Commander of Schofield Barracks, Major-General Charles T. Menoher, made his annual inspection of Wheeler Field recently. The inspection included:

- (a) Review, immediately followed by inspection of personnel in War Set Equipment.
- (b) Methods of aerial communications.
- (c) Aerial Gunnery and simulated day bombing.
- (d) Inspection of planes on the line.
- (e) Inspection of hangars and equipment.
- (f) Inspection of motor transportation.
- (g) Inspection of barracks and kitchen.

An Altitude Flight in a DH Airplane

For the purpose of testing a new side-type supercharger, Lieut. Harold R. Harris, pilot, and Mr. Morse, observer, made a flight on December 13 from McCook Field in a standard DH airplane, which had been fitted for this trial with a special steel engine mount and an underslung radiator. The side-type supercharger, with which the DH was equipped, is the first of its type developed for use with the Liberty engine. Its weight is 125 pounds and it has a rated altitude of 20,000 feet, but by overspeeding can be made to work up to 30,000 feet. Standard gaseous oxygen tanks were carried. During the climb readings of engine, airplane, and supercharged conditions were taken every 2,000 feet. The oil pressure went down to a low figure with increased altitude, and so much water was lost due to improper settings of the radiator relief valve that the motor lost considerable power. However, an indicated altitude of 29,400 ft. (afterward corrected to 27,000 ft.) was made which, beyond doubt, was an event in the life of a standard DH, and no mean success for the supercharger. The duration of the flight was 43 3/10 minutes. Lieut. Harris made the descent in 14 9/10 minutes, or at the rate of 17 1/2 miles per hour. The lowest temperature encountered was twenty-nine degrees below zero.

Specialized Flying Training Started at Kelly Field

Specialized training in the four branches of Aviation began at the Air Service Advanced Flying School at Kelly Field, San Antonio, Texas, recently. The Students now on duty at the Advanced Flying School have been assigned to the four branches of training, as follows: Pursuit training—2d. Lts. Benj. W. Chidlaw, H. M. Wittkop, Townsend Griffiss, John S. Griffith, O. R. Cook, Cadets Jesse B. Stowe, Dean W. Burford, John A. Collins, Chas. N. Wisely, S. A. Gilkey, Wm. H. McArthur, and Marius C. J. Markle; Bombardment training—Capt. R. C. Candee, 2d Lts. R. E. Snively, C. E. O'Connor, M. E. Gross, Alfred A. Kessler, Hugo P. Rush, Cadets Frank F. Ray, Archie R. Loomis, Leroy Manning, Geo. W. Allen, F. V. Tompkins, and F. J. Schwaemmle; Attack training—Majors O. Westover, Wm. B. Duty, 1st Lt. F. W. H. Kimble, 2d Lts. James W. Spry, Milton Long, Cadets A. S. Smith, Geo. A. Weis, L. C. Sherman, L. G. Fritz, and Schuyler Priestly; Observation training—Major R. E. Rowell, A. S., M. C., Capt. Willis H. Hale, 1st Lts. Byron T. Burt, F. E. Hopkins, Wm. V. Andrews, 2d Lt. L. C. Catlett, Cadets Chas. H. Earnest, Julius W. Johanpeter, C. E. Smith, John C. Kliemand, Milton M. Murphy, Rodney S. Lamont, and Earl W. Fleet.

A Misadventure in the Philippines

Lieut. Hicks returned from a visit to Col. Sam Johnson in southern Mindoro and reports wild tamarau (belonging to the carabao family but much smaller, with straight horns receding backward from the base, and very ferocious and dangerous to hunt) so docile and affectionate that they will follow you around—at about fifty miles an hour with head down and decks cleared for action. The equipment needed to hunt them is a 16" gun and a medal for tree climbing. These animals (in their most peaceful aspect) are about as harmless as a cornered lion, but not any less so.

Crocodiles are so common in Mindoro they hang around your kitchen door, awaiting any sort of raw meat that may appear. These reptiles are fond of Chinese cooks—garnished with bullets and profanity. Crocodiles are not a sociable lot. Their table manners are execrable.

Lieut. Weddington reports that his carabao raced a crocodile for two miles. The crocodile snapped at the carabao's tail on the last lap and missed it by four inches, after which he quit in disgust. On another occasion the same officer reports that a crocodile ambushed his carabao, threw him, and bit off six inches of his tail. Can you tie that? The officer meantime looked on exclaiming at regular intervals "Desist!" "Desist!" Valiant work with the bolo and vocal organs achieved the undoing of the reptile.

Like Mark Twain's stage driver, this person's statements are not generally believed.

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Lieut. J. D. Price Has Narrow Escape

With fire from his blazing plane burning the soles of his feet, and expecting the gasoline tank to explode at any moment, Lieut. J. D. Price, USN, was pulled to safety by his meehanic, R. E. Burgsten, ACHM, on December 21 at Cheyenne, Wyoming. Lieut. Price, Lieut. B. H. Wyatt, and two meehanics, from the Aircraft Squadrons Battle Fleet, recently left San Diego in DH-4B planes for a flight to Washington, D. C., where they were to join the newly formed VS Squadron Three, being organized at the Naval Air Station at Anaeostia, D. C. One of the stops of the flight was at Cheyenne, Wyo. While taking off at Cheyenne, handicapped by a heavy load of fuel and the rarefied atmosphere at that elevation, the plane of Lieut. Price struck a fence with its tail skid, and was unable to clear another fence which was right ahead. The plane struck the second fence and crashed; the gasoline gravity lead broke and fire broke out immediately. The top wing section was forced down on Lieut. Price, imprisoning him in his eockpit. The meehanic, Chief Burgsten, got clear and at once began to extricate the pilot. The flames were gaining rapidly, and had actually reached Lieut. Price's feet when Burgsten released him. Lieut. Wyatt, in the other plane, which had taken off, observing the crash and the fire, landed and rushed over to the wreck, which was a mass of flames twenty-five feet high by the time he was able to get there.

After the mishap the two meehanics continued on by train, the two officers flying the remaining plane to Washington, which was reached on Deeember 29.

In Algiers, Argentina, Australia, China, Columbia, Denmark, Egypt, France, Germany, Great Britain, Hungary, Italy, India, Mesopotamia, Mexieo, Netherlands, Poland, Spain, Sweden, and Uruguay, attempts have been made in the transportation of mail by air either by the military service or by the heavily subsidized private operating organizations.—Aircraft Year Book, (1923.)

Forty some Liberty-12 engines from the Roek Island Arsenal are now being overhauled at McCook Field for the proposed Round-the-World flight.

Capt. Thomas J. Hanley, Jr., returned from leave in China and resumed command of the 28th Bombardment Squadron, relieving 1st Lieut. E. E. Aldrin.

REAR ADMIRAL WILLIAM A. MOFFETT has received a radiogram from Donald MacMillan, famous arctic explorer who is now drifting with the ice floes far in the Arctic wastes, expressing his congratulations on the proposed polar journey being planned by the U. S. Navy, using the giant airship "Shenandoah." The veteran explorer has offered his co-operation in event the polar flight is attempted.

LIEUT. E. G. PLANK with Lieut. C. D. Williams and the rest of the party who have been working on the aerial survey project of the Tennessee River since early October, 1923, returned to McCook Field recently, having accomplished their mission in record time despite exceptional handicaps in the way of bad weather conditions and lack of landing field facilities.

The expedition suffered two crack-ups at Knoxville due to the extremely poor landing field provided there. "We prayed for a sky hook every time we nosed down for a landing at this joint," related Lieutenant Plank upon his return to his home post. Bristol on the Tennessee-Virginia line was used as a base of operation for the project which was instigated to assist engineers in determining the extent of water power facilities along the Tennessee River.

MAJOR ROBERT A. HALE is assigned to McCook Field as flight surgeon after a period of temporary duty at Mitchel Field.

PROFESSOR ROBERT H. GODDARD can be regarded as one American at least who takes stock in the "jet propulsion" dreams of our lately far removed Russian scientist, Dr. George deBothezat, who for the time being is trying to interest the Britons in building a helicopter.

It is recalled that not so long ago the Doctor proposed to build a sort of "vacuum bottle" airplane for a trip to Mars or Venus, the power to be furnished by the explosion of certain chemicals which would shoot the plane through the air much after the fashion of a rocket.

Now Professor Goddard expects to build such a craft for making a flight to the moon and his idea has stirred some interest in Germany, which is shown in the recent discussion with fellow scientists of Herr Oberth who actually has laid plans for constructing such rockets for shooting to the planets. As a motive power Herr Oberth would use either alcohol or hydrogen in fluid, to be burned with oxygen. He claims that such a rocket can be built for an expenditure of about \$250,000. "Cheap" at that, we might venture.

LIEUTENANT OAKLEY G. KELLY was lately transferred from Mitchel Field to Vancouver Barracks, Washington. Lieut. Kelly will make this latest Coast to Coast journey in an ocean steamer requiring about six weeks to complete the trip. Lieutenant Kelly would no doubt prefer making the trip in the famous old Air Service Transport T-2 with which he and Lieut. Macready flew from New York to San Diego, California, in a continuous flight of twenty-seven hours. The slower ocean journey will no doubt be well enjoyed, however, since it will serve as a rather belated honeymoon for the veteran pilot and his bride.

ANTHONY H. G. FOKKER, one of the foremost foreign personages of the aircraft industry, made a recent visit to McCook Field from the Netherlands, where his large factory is located.

It is known that Mr. Fokker has contemplated building an airplane factory in this country and considerable interest is coupled with his visit, since it is expected that he will make a decision on the project at this time.

Mr. Fokker came to McCook Field to confer with Engineering Division officials concerning his contracts with the U. S. Government.

The famous Air Service Transport T-2 is a modification of the Fokker design of transport monoplane.

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1000-Mile Speed Likely to Kill

Major L. H. Bauer, M. C., U. S. A.

Lieutenant A. J. Williams of the Navy, it will be remembered, after winning the Pulitzer Trophy Contest with a speed of 243.67 miles an hour, a mark which he afterwards far surpassed, stated that he had become unconscious at the turns, or in his own words, "I went out cold as I turned the pylons."

It will perhaps interest the readers to know why he became unconscious and what the possible chances are of serious trouble ensuing from such dazzling speed. First of all, our blood is distributed by means of our heart and blood vessels all over the body. Our blood vessels are controlled by a system of nerves that cause the vessels of one part of the body to become larger or smaller, depending on the amount of blood needed by that particular part of the body.

For example, after we have eaten we need more blood in our digestive apparatus to aid in digestion. Consequently, considerable blood is diverted to the organs in the abdomen. When we are studying we need more blood in our brain, so more blood is diverted there, and so on.

We have a system of blood vessels in our abdomen that technically are known as splanchnic vessels. These vessels act as a blood reservoir and are easily dilated to hold more blood. When we are lying down our circulation is adjusted for that position. When we stand up our circulation rapidly adjusts itself to the new position. Have you ever jumped quickly out of bed and felt dizzy, everything in front of your eyes becoming blurred? If so, your circulation, which was adjusted to the horizontal position in bed, did not adjust itself quickly enough to the upright position. As a result you had insufficient blood in your brain, causing temporary dizziness and faintness.

This will give you, perhaps, some idea of how Lieutenant Williams felt as he turned the pylons. However, there is another important factor which was chiefly responsible for his symptoms. You are all familiar with the sensation of riding in fast trains of cars, particularly if you stand up. If the train goes around a curve to the left you fall toward the right. In other words, there is an action known as centrifugal force which pulls you in the direction in which the train was originally going. If before the train turned the curve you leaned to the left the force would pull you upright.

A flyer when flying a straightaway course has his head upright and the plane controlled by a system of nerves that is practically horizontal; that is, the wings are parallel to the ground. When a flier makes a sharp turn, say to the left, he not only turns to the left, but

also banks the ship so that the wings are now vertical. The position of the flier's body is therefore horizontal, or parallel with the ground. The direction in which he was originally flying before making the turn, is, therefore, the direction of the pull of centrifugal force.

It will be seen that centrifugal force is acting in a direction away from the flier's head, or toward his feet. So that we have two factors: 1, centrifugal force, and 2, the change in position of the flier's body. Instead of leaning to one side as you might do in the train, the flier has to bank his ship to prevent accident, just as a railroad track or automobile speedway is banked higher on one side.

The flier is strapped into his machine so that centrifugal force cannot pull him out of his seat, but centrifugal force does pull on his body and as a result everything in his body that can move does so in the direction of the pull. This means that his blood, which is, of course, fluid, is carried away from his head into the easily enlarged splenic vessels already mentioned, and even into his legs.

This means that he has a lack of blood in his brain or what medical men call anemia. When we have anemia of the brain we become unconscious. Hence the flier becomes unconscious when making a turn at terrific speed.

When a man is flying at the rate of four miles a minute it will be seen that making a turn occupies but a moment. Anemia of the brain causes faintness and unconsciousness immediately. The flier quickly recovers because the circulation rapidly adjusts itself to the new position of the body and the action of the centrifugal force quickly changes to the direction of the new line of travel. At slower speeds the pilot does not become unconscious because the centrifugal action being less, no anemia of the brain is produced, and furthermore, the circulation is more readily adapted to the change of the position of the body.

Now—how high a speed can the human being stand and still live? Is it possible to attain a speed so great that the anemia produced will be so marked and so prolonged that recovery will not take place? The answer is probably yes.

We cannot say how great this speed will be. Experiment only will show. However, we have another factor.

(Continued on page 36)

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says L. D. Payne.
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Progress of Preparations for Central American Flight

With the announeement of the proposed flight of Army airplanes on a visit of courtesy to the various countries of Central America comes the following additional information from our France Field Correspondent:

"Some definite action has finally been started on the trip to Guatemala City, which has just been authorized by the War Department. Lieut. John M. Clark, A. S., left October 31 as advance agent for the trip. The flight will be commanded by Major Rayeroft Walsh, with Major Follett Bradley in charge of laying out the routes for mail and passenger service. Lieut. Perry Wainer will be radio and log officer; Lieut. L. L. Beery, navigator; Lieut. Leland Miller, photographic and historical record officer; and Lieut. Frank Albrook, engineer officer. It was originally intended to take two DHs and one Martin Bomber, but it is rather questionable whether the Martin will go or not, considering the altitude of some of the landing fields. This, however, will depend on the recommendation of the advance agent.

"Lieut. Clark will have a trip from France Field to Port Limon, Costa Rieo; San Jose, C. R.; Pontarenas, C. R.; Corinto, Nienaragua; Managua, Nicaragua; Anapala, Honduras; Tegucigalpa, Honduras; Comayagua, Honduras; San Pedro Sula, Honduras; Puerto Cortes, Honduras; Puerto Barrios, Guatemala; Guatemala City, Guatemala; San Salvador, Salvador; Acajutla, Salvador; and then back to France Field. The trip will be made by boat, rail, auto, and donkey. the latter part probably very interesting for a flyer.

"The flight itself will go to David, Panama; then to the capital cities of San Jose, Costa Rico; Managua, Nienaragua; Tegucigalpa, Honduras; San Salvador, Salvador; and Guatemala City, Guatemala, visiting these cities as a matter of courtesy, and then return. The return trip will be made more leisurely, with many small side trips for the work of laying out routes, photographing, etc. As soon as the maneuvers in January are over, everything will be set and the flight will take off."

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From the Atlantic to the Pacific Coast and Back in Fifty Minutes

Yes, the above is an actual fact. But don't be alarmed, dear reader, for there is only one place where such a thing could happen—the Isthmus of Panama. Our France Field (Panama) Correspondent, touching on the fact that Monday, October 15, marked the beginning of the France Field—Balboa Transcontinental Aerial Mail Service, states that a plane takes off each day from France Field with the official mail for Department Headquarters, lands at Balboa Field, delivers Headquarters mail and picks up the mail for France Field. The trip from Atlantic to Pacific coast and return requires less than fifty minutes flying time. He further goes on to say:

"The world's record for coast to coast flights has been broken so many times by France Field pilots that we have lost interest in competing. To show the world what we think about Transcontinental Flights we will relate a little incident that took place a few days ago. One of our 'Loots' was sitting in the Operations Office entering time in his pilot book when he got a phone call from some desk warrior on the Pacific side. He tried for several minutes to make out what was wanted, but the 63rd Service Squadron was tuning up an engine on the line and it couldn't be done. He told the party to stay right where he was for about twenty-five minutes and they would get together. He rushed out of the

Operations Office with helmet and goggles. One hour later he was back at his job entering time and was grumbling something about 'That guy over on the Pacific side sure is long-winded' and 'Dog-goned air over the Continental Divide sure was rough this morning.'

"That's what France Field thinks about a two way transcontinental flight."

Visit of the Duke of Sutherland

On December 20, the British Under Secretary of State for Air, the Duke of Sutherland, together with Mr. Watson, the British Consul General at Philadelphia, and Wing Commander Christie, British Air Attache, visited the Naval Air Station at Lakehurst, N. J., and were taken through the USS Shenandoah. From Lakehurst the Duke of Sutherland and his party went to Washington, where the Army Air Service station, Bolling Field, and the Naval Air Station at Anacostia, D. C. were visited. The Duke was taken on a flight in a Navy Seaplane down the Potomac River as far as Mount Vernon. A dinner was given in his honor at the Hotel Shoreham by Wing Commander Christie on December 22. There were present at the dinner more than fifty guests, including Major General Mason Patrick, U. S. Army, Rear Admiral William A. Moffett, U. S. Navy, Assistant Post Master General Henderson, and other prominent in the aviation activities of this country.

New Device Conserves Helium

The U. S. Bureau of Standards, in co-operation with the Army Air Service, has devised a condenser, or water ballast recovering apparatus for retrieving moisture in the exhaust gasses from the engine and thus rendering it unnecessary to valve helium, the non-inflammable but scarce and costly gas with which the huge Navy airship "Shenandoah" is now inflated.

To maintain the equilibrium of an air-ship inflated with either helium or hydrogen gas, it is necessary at times to "valve" or, in other words, permit some of the gas to escape in order to compensate for the weight of fuel consumed by the engines, or to overcome the expansion of the gas caused by the heat of the sun's rays.

How to compensate for the weight of fuel lost and also to maintain the lifting gas at an even temperature so as to conserve helium, which in future is destined to supplant hydrogen gas in lighter-than-air craft, presented a difficult problem for government engineers. As early as 1915 the British government made some efforts in the direction of the recovery of the water vapor component formed as a product of combustion from the exhaust gases from the engine, but the results achieved were not of sufficient promise to warrant the continuation of tests. Sometime prior to 1920 a type of water recovery apparatus had also been experimented with at the Washington Navy Yard.

The information gained through these experiments proved of value when work began on the project for the Army Air Service. While the experiments were financed and sponsored by the Army Air Service, it was the scientists at the Bureau of Standards who worked out a

practical solution of the problem and developed a successful device.

The condenser consists of a series of long slender pipes or tubes, .022 inches in wall thickness and one inch in diameter, comprising some 300 feet, through the inside of which gas is conducted on its way from the exhaust manifolds of the engine to the atmosphere. The air sweeping over the outside of the pipes as the airship is in motion cools the gases and the condensed water vapor is drawn off from a separator through approximately located drains. The weight of this water is approximately the same as the fuel consumed. It has long been known that for every pound of fuel economically consumed there is available in the exhaust gases more than the same weight of water vapor.

The apparatus, which of necessity had to be built as light as possible in order to permit its use on airships, weighs only about 450 pounds, complete, is made of aluminum and aluminum alloys, and is sufficient to take care of the exhaust from two 150 h. p. engines. The efficiency of the apparatus was evidenced by the recent successful trial flights of the Army Airship D-3 at Langley Field, Va., and the Aberdeen Proving Grounds, Md., and it quite likely that same will be installed eventually on all service airships.

Having solved the problem of compensating for the weight of fuel consumed, there remains only that of maintaining the desired temperature of the lifting gas. Work is already in progress along this line, and much preliminary data is available.

Field Work to Be Enlarged

Arrangements for enlarging their present facilities in all branches were completed by officers of the Johnson Airplane and Supply Co., Dayton, Ohio, according to information received Thursday.

James M. and E. A. Johnson, two officers of the company returned to Dayton, Thursday, after an extended trip east where they bought a great quantity of supplies and a number of new airplanes which will be put in service this spring.

Among their new purchases was a five-passenger Lincoln standard plane to be used in their passenger carrying system.

New supplies will be received and new buildings to house the supplies will be built early next spring.

James Johnson announced Thursday that the company would be represented by at least four planes in the commercial events staged in connection with the holding of the International Air races here in October of next year.

Wright Personnel Gives Party on Board to Orphans

A Christmas party, including a dinner, a Christmas tree and plenty of presents was given by the officers and men of the U. S. S. Wright to more than fifty orphans of Philadelphia on Christmas Eve. The party was held on board the vessel, which is at the Navy Yard, Philadelphia, getting ready for the winter maneuvers. The party was a great success, and will live long in the memory of the children guests of the Navy men. More than \$500 was contributed by the personnel of the ship for the party.

A REPORT from Frederikshavn states that three airplanes are being built there for use by Captain Ronald Amundsen on his proposed trip to the North Pole scheduled for some time next summer.

With the plans being laid by the U. S. Navy, along with several other such ground expeditions now in progress by individuals it appears that if everything goes well there will be a sufficient number gathered around that frigid neighborhood to hold a veritable "Maypole dance."

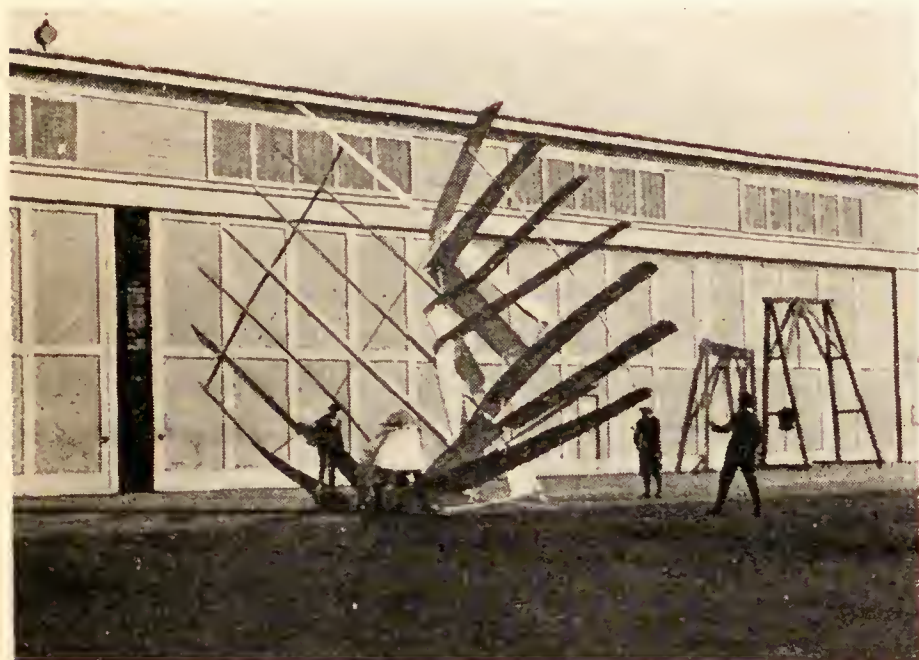
(Continued from page 11)

thrill was derived from the result, as it meant that the theoretical calculations were confirmed.

Further trials were discontinued until certain repairs and improvements were made on the machine.

It was in October that the "tuned up" craft was again wheeled out when it was expected to obtain some moving picture records and then disassemble the craft until a later date. Lieutenants Alex Pearson and "Mac" Macready arrived on the scene in time to "direct" the comedy settings.

Everything was put in readiness and the operator took his position for the take off. The towing "tug" moved forward and the operator began to pump the



The collapse of the frail Cycleplane structure

pedals, but no sooner had the craft cleared the ground than something essential to the rigidity of the structure gave way and the fuselage gently folded in two and the wings collapsed backward. It must be admitted that this method of disassembling was not premeditated, and is not to be recommended except for its dispatch.

Naturally the question arises as to what were the technical results of the trials. Simply two: (1) Scientific demonstration of the predicated possibility to fly level

with the normal power a man can produce; (2) The accumulation of certain data for further and more interesting developments suggested by it.

It seems highly probable that in the future man will be able to take advantage of the currents as do the birds, and soar indefinitely, going from one favorable current to another by means of his own effort.

The Pescara Helicopter Flies

Recently M. Pescara succeeded in remaining in the air on his helicopter for five mins., forty-four and one-fifth seconds. In the course of a number of trials he also flew in a horizontal direction for 270 yards, landed, and after half-an-hour's interval flew back to his starting point. Later he made another horizontal flight of 380 yards. All these flights were made at an altitude ranging from two and one-half to six and one-half feet. Apparently no chances are being taken in the matter of forced landing.

(Continued from page 32)

not yet mentioned, on which we shall have to figure. Dr. Garsaux of France did some experiments with dogs. He rotated them on a wheel at speeds varying from four to six turns a second. Some of the dogs showed actual injury to the brain, from the brains being pressed against the skull. Recovery followed in some, death in others. Autopsies showed there was an anemia of the brain and an engorgement of the vessels of the abdomen area, thus bearing out our statements about the aviator.

It is, therefore, not a wild theory to presume that a speed may yet be attained which, when a turn is made, would be sufficient to cause pressure on the stem of the brain in such a manner as to cause death. Furthermore, the force of such violent action would be sufficient to rupture blood vessels both in the brain and in other parts of the body, which in themselves might be sufficient to cause death or lasting injury. So when we talk of attaining a speed of 1,000 miles an hour, let us not forget that, while mechanically possible, there is a human element which may make it impossible.

5

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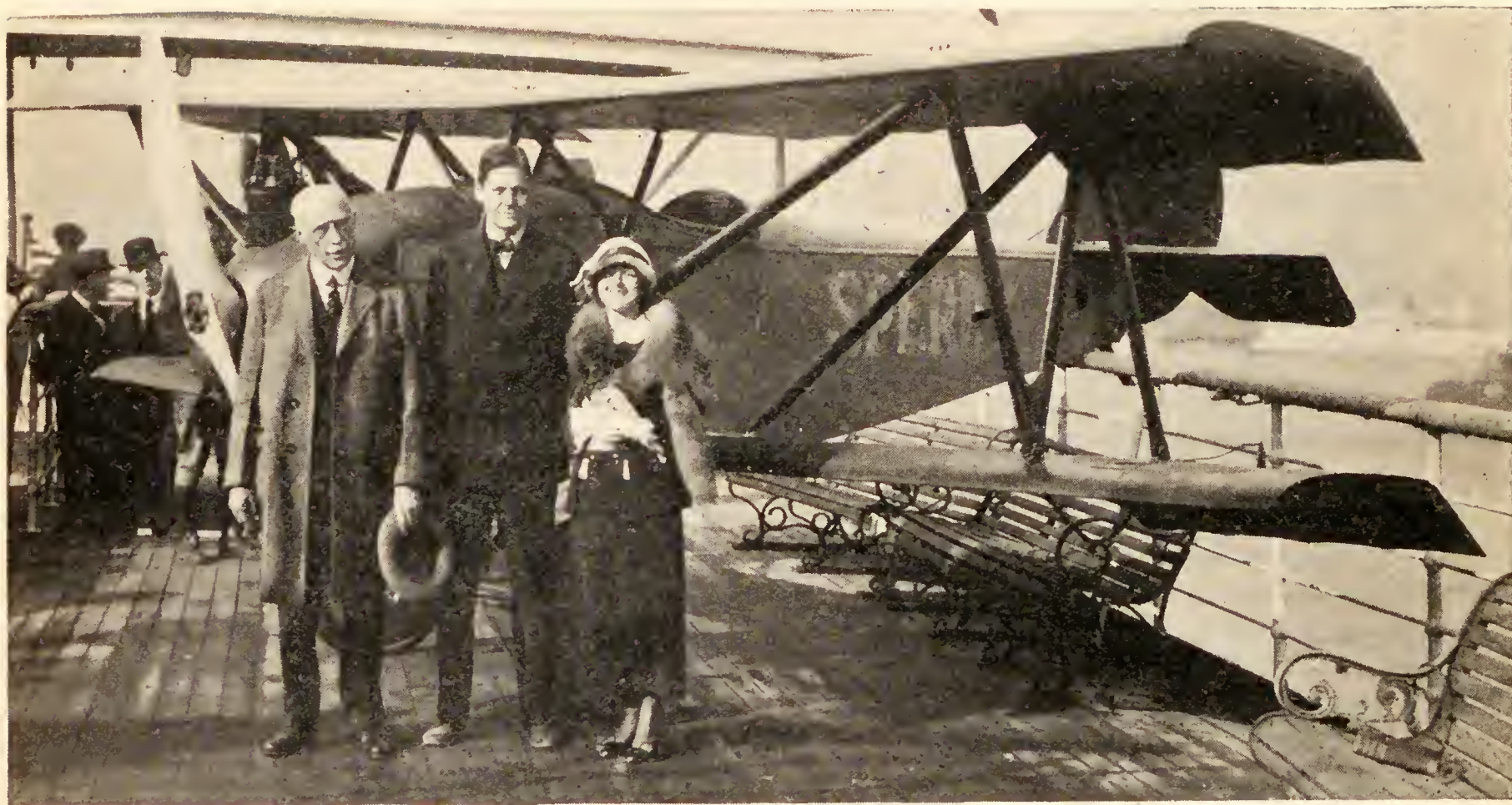
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The Dayton Coca-Cola Bottling Co.



Lawrence Sperry Falls Into Sea



—International News Reel Photo

Lawrence Sperry, well known personage in air circles both in this country and abroad met an untimely fate December 13, while attempting to cross the English Channel to Amsterdam in his diminutive airplane of his own design.

Considerable mystery surrounds the mishap as may be gathered from the following facts as related in "Flight" (England): "He was last seen passing over the coast near Fairlight on the English Channel coast, witnesses stating that he was flying low and that his motor was running erratically. He circled about several times over land and then put out over the channel, disappearing in the mists. It

was reported shortly after that he was seen to fall into the water three or four miles out from shore. A boat put out from Rye, and eventually found the machine floating on the surface, practically undamaged. No trace of the pilot was found. The machine was brought ashore, and has been sent to Lympne to be examined."

The accompanying photo shows the noted aviator (center) with his father and wife as they sailed for abroad. The "flivver" plane in which Sperry later met his death is shown aboard the same vessel.

FAIRCHILD DEVELOPS REMARKABLE CAMERA

Following the announcement made recently by the Fairchild Aerial Camera Corporation that all flying for the aerial map of Greater New York had been completed, details of the new Fairchild Aerial Camera which made this tremendous mapping project possible, have been announced.

This camera which weighs but forty pounds has over a thousand parts and is considered to be one of the finest examples of automatic precision machinery ever made.

An even later development of this "between-the-lens" aerial camera has just been finished by Sherman M. Fairchild, its inventor, with the co-operation of U. S. Army Air Service photographic experts.

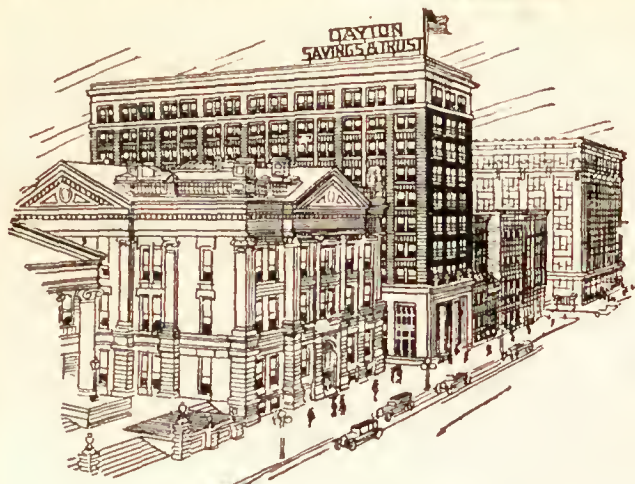
It is now possible for a squadron of photographic planes equipped with this Fairchild Camera to work and take photos accurately and of a remarkable clearness, unseen and unheard by people on the ground.

The Fairchild high efficiency shutter plays a big part in the success of high altitude mapping—A lens of F-5—20" proportions is required, working at all times at full aperture.

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The Airplane's Twentieth Anniversary

The twentieth anniversary of the first flight of an airplane was celebrated in many places throughout the United States, but perhaps nowhere with so deep a significance or so high an enthusiasm as in Dayton, Ohio, the home of the Wright Brothers, where Orville Wright still lives with his sister, Katherine. From early morning until night the spirit of homage to the brothers who first gave the key of this force to the great revolutionizing force of aviation and to the world, held sway. Letters of congratulation from President Coolidge, from Secretary of War Weeks, from Theodore Roosevelt, Jr., and many other notables came through the mails. Foreign nations as well as our own Army and Navy sent their representatives to pay tribute.

The program for the day was simple and dignified. Officers of McCook and Wilbur Wright Fields with some two hundred members of the National Aeronautic Association met the visiting guests in the morning. Luncheon was held at the Wright home, not the least distinctive feature of which is the complete collection of the earliest Wright models, the failures as well as the successes, which characterized the first gropings of these two young geniuses toward their light.

It was a distinguished company which gathered round that board. There were Mr. Steffanson, the noted Arctic explorer and author, and Mr. Carl Akeley, inventor and big game hunter, both close personal friends of the Wrights; there were Maj. Gen. Mason M. Patrick, Chief of the Air Service; Rear Admiral Moffett, U. S. Navy; Commander S. A. Brown, Naval At-

tache of the British Embassy; Captain Georges Thenault, Air Attache of the French Embassy; Wing Commander Mario Calderara, Air Attache of the Italian Embassy; Mr. Frederiek Patterson, President of the N. A. A.; Mr. Howard Coffin, past president of the N. A. A., and others. As the luncheon ended a line of seventeen airplanes, representing the development of all the different types of airplanes from that first early type, flew over the house in salute.

A visit to McCook and Wilbur Wright Fields was made in the afternoon, and at night a great public demonstration was held. In a life crowded with many honors, the memory of this night must ever stand out in Mr. Wright's memory. Mr. Patterson introduced Hon. James M. Cox, former Governor of Ohio, who introduced the visitors whom we have already named. All spoke briefly and eloquently of the debt of gratitude of the world to these two inventors of the airplane.

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Flying Off the Map

Flying completely off the map was the experience of a group of airmen from McCook Field, who took off in a 35,000 cu. ft. balloon on December 12, at 9:15 A. M., for a free balloon flight. The passengers were Captain Wm. B. Mayer, Pilot; Major H. A. Strauss, Lt. Robert E. Robillard, and Lieut. Ira R. Koenig.

Weather conditions were steady with S. by S. W. ground winds of a speed of eleven miles per hour. Because of this low velocity, only a map of southern Ohio was taken, and in danger of spoiling the story, at this early stage of the game, it must be admitted that this is the map whose confines could not contain their travels. The balloon had started off in a southerly direction, but upon rising to 3,000 feet struck a cross current wind with a velocity of forty-five miles per hour. In three hours southern Ohio was left behind and the map discarded. Judging that they were headed in the general direction of Cleveland, they decided to come down after a time to try to obtain more specific information. Flying low they shouted their questions at some up-turned faces they passed above in the fields. The questions were heard without difficulty, but by that time the ground wind had increased to thirty-five miles per hour and travel was so fast that they could not catch the answers. However, emphatic gestures aided, and rising again they saw the outskirts of Cleveland in the distance.

On landing the gas did not leave the balloon immediately upon pulling the rip panel, and for a moment it seemed as if the balloon might be carried into dangerously wooded territory, but suddenly the balloon collapsed and a safe landing was effected in a thirty-five-mile-an-hour wind, five miles from the little town of Macedonia.

The trip was made for the purpose of testing out the rate of climb indicator. A recording barograph, an altimeter, and a statoscope were also carried. In conformance with the new regulations, all passengers were equipped with parachutes. The balloon type, at-

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tached to the rigging of the balloon, was used. The flight lasted four hours, and a distance of 176 miles was traveled.

Greetings From Rockwell Field

While newspaper reports show that the country east of the Rocky Mountains is getting its quota of cold winter weather, we of Rockwell Field still keep plenty of ice in the water coolers and have our office windows wide open, which indicates that we are enjoying the sunshine and flowers of beautiful "southern California," and at this time may I add that the Rockwell Air Intermediate Depot wishes all readers of the news letter a Happy New Year.

Rockwell Air Intermediate Depot Has Willing Workers

The U. S. Army Transport Meigs, which arrived from Manila, P. I., at the Naval Air Station wharf, San Diego, Calif., on November 27, unloaded 374 pieces of freight, consisting of 183 boxes of airplane parts and 191 Liberty engines. Due to the fact that the crew on the Meigs was limited, the task of unloading this material fell upon the personnel of the Air Intermediate Depot. Notwithstanding the fact that Thursday was Thanksgiving Day, when all work ceased, six DH-4Bs and 58 boxes of miscellaneous airplane parts were loaded for the Philippines, in addition to 15 boxes of airplane parts for Crissy Field in time for the ship to sail for the north Friday evening. Inasmuch as a boxed Liberty engine was the smallest package handled, credit is given to the employees at the Depot for their co-operation and the efficient manner in which this task was performed.

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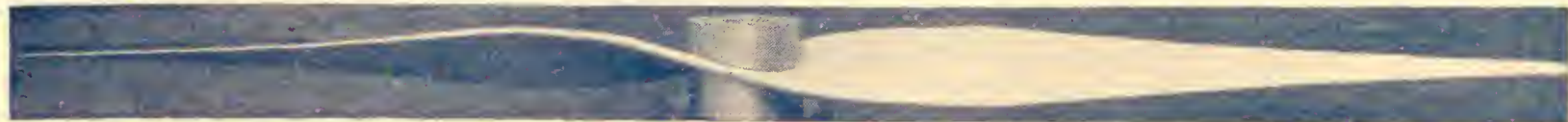
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THE SLIPSTREAM MONTHLY

PUBLISHED IN DAYTON, OHIO

"THE BIRTHPLACE OF THE AIRPLANE
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GARWOOD '23

Vol. 5

No. 3



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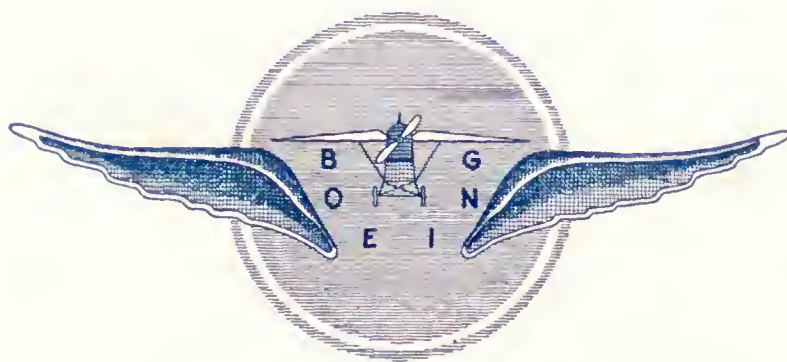
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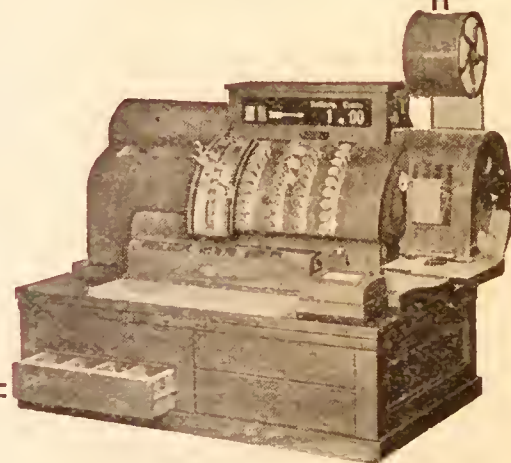
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VOL. 5

MARCH

NO. 3

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FRED F. MARSHALL, Lieutenant O. R. C. Editor and Business Manager

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Frederick Patterson, President of the National Aeronautic Association, and family, each member of which is listed in the roll of this rapidly growing organization. The Dayton, Ohio, Chapter, with which the Patterson family is affiliated, is by far the largest in the United States with a membership of nearly 2,000. Miss Fredericka, the two-year-old daughter of Mr. and Mrs. Patterson, is now recognized as the youngest member of the N. A. A.

THE MIDNIGHT CRUISE OF THE SHENANDOAH

By C. P. Burgess, Aeronautical Engineer

(Written for Slipstream by Mr. Burgess, a passenger aboard the runaway airship.)

ON the evening of Wednesday, January 16, a heavy gale marked by gusts of very exceptional violence tore the U. S. Naval airship "Shenandoah" from the tall mooring mast to which she was riding, and in an instant the great airship was embarked on what a naval officer has aptly termed "the most remarkable cruise that ever was cruised."

The safe return of the airship to her hangar after a nine hours'

battle with the gale, commencing under the most extraordinary adverse conditions, has aroused immense interest with the American public, and an eager desire for full details. In this thrilling flight, I alone was present as a passenger and spectator, having

no part in the responsibilities and activities of the officers and crew, or in the honor due them for the skill and courage with which they played their parts and brought the battered airship safely home. My position as observer and narrator is therefore unique.

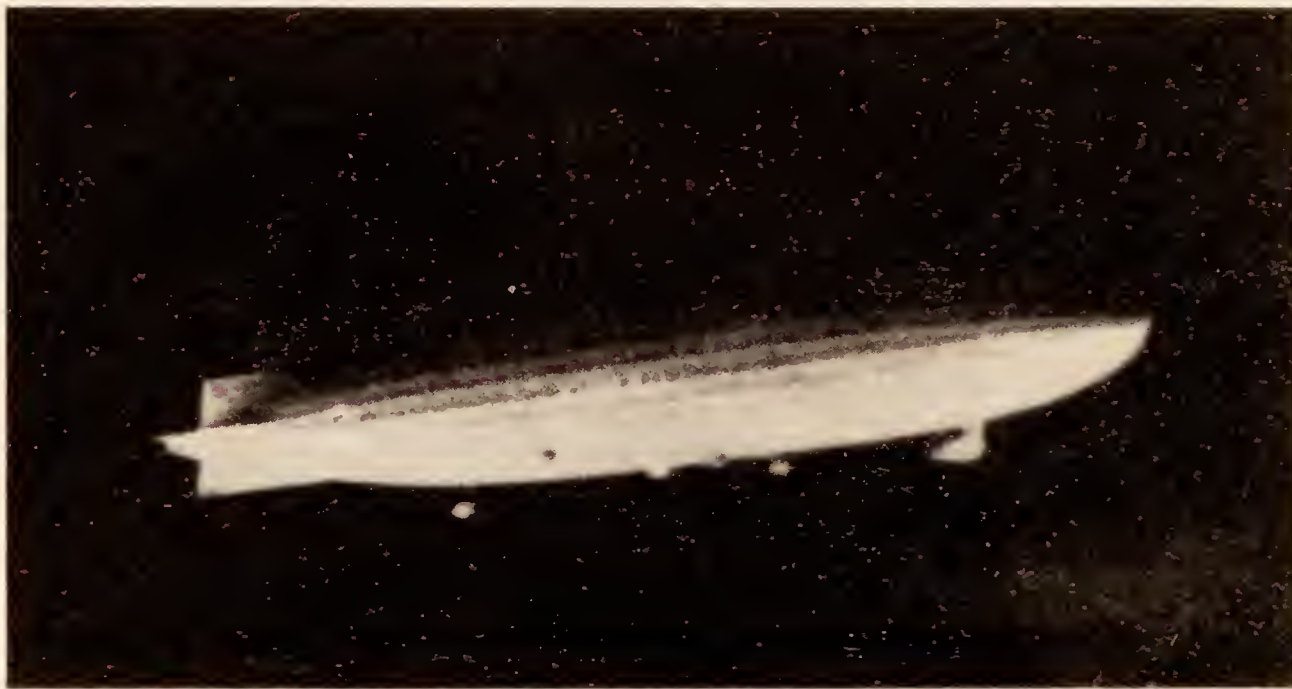
A southeast gale approaching a maximum velocity of sixty miles per hour had been anticipated, and it was desired to test the behavior of the ship when riding to the mooring mast in such conditions; and as a part of the test, strain gages had been placed on the longitudinal girders of the hull over the control car where the maximum bending force was anticipated.

About six p. m. the strength of the gale rapidly increased, with gusts up to 75 miles per hour velocity, shown by the wind gage to be veering nearly 45 degrees in direction in less than a second. One such gust probably struck the upper vertical fin at a considerable angle, for the fabric of this fin was suddenly torn apart and many of the girders broken. At the same time the upper rudder was rendered useless by the partial collapse of the fin. The torn fabric of the fin blew out into the wind as an immense parachute and the

airship was jerked so violently that the longitudinal girders broke just aft of where they terminated in a strong cap at the bow.

I was in charge of the strain gages, and for the last hour before the break away the strains shown were large but by no means alarming. During this period the noise, jar, and vibration in the ship were truly terrifying. The gale screamed through the steel lattice

structure of the mooring tower and around the ship, the fabric cover of the hull flapped and shook, while metal twanged on metal, and the whole ship trembled like a steamship incessantly striking heavy seas, although there was but little pitching or rolling.



An unusual view of the Shenandoah, the first of its kind ever published in a magazine, showing the great Zeppelin winging her perilous way through the storm-swept night.

Suddenly there came a jerk and a crash, the latter seeming to come from below rather than ahead; and my first impression was that the control car had dropped off. From my station in the keel over the control car I had to move only a few feet to glance fearfully down the hatch, expecting to see the demolished car with the mangled bodies of the officers on the ground a hundred and twenty feet below. To my immense relief the little portion of the control car which could be seen by looking down the hatch was where it should be; and then I realized that the strong light which had been shining into the ship from the powerful flood lights at the masthead had disappeared, and for an instant I thought that nothing more serious had happened than that the lights had been blown from the mast and crashed to the ground.

The next impression was that the screaming of the gale had suddenly given way to silence, and then I knew that we were adrift, although I did not guess in what damaged condition. The stern began to rise, and I heard Pilot Heinen shout from the control car, "Everybody aft!" Even a passenger has weight, and



The huge Shenandoah as seen some months ago while winging her majestic way upon the spectacular cruise to St. Louis from Lakehurst, New Jersey. The big airship touched Chicago and Cleveland during her return voyage to the base, which marked the completion of a 2,200-mile trip.

I started running along the keel, the run speedily turning into a climb as the stern rose higher and higher.

LET us pause now to consider the predicament in which the ship was placed at that moment. Instantly at the break away the officers in the control car had leaped to the water ballast controls and all ballast was dropped, so that the ship rose in the air and was saved from immediate disaster, although the stern missed the ground by a bare twenty feet. The SHENANDOAH was now adrift in a seventy-five mile an hour gale with all ballast gone, more than half the vertical fin and rudder area gone or ineffective, the bow torn open and the gas pouring from the two forward gas cells, the engines at rest, no opportunity to ascertain the static condition of weight and buoyancy by "weighing off," only a part of the crew aboard, and mostly green men at that. Up to this time many authorities had persistently denounced the large airship, maintaining that craft of this type are rendered practically unmanageable in gales of any great proportion. Surely if there were any truth in this contention, the case of the SHENANDOAH was now hopeless indeed.

Soon the stern ceased to rise, and began a rapid descent, and the order ran along the keel to move forward again. There were only five of us in the keel, and we found ourselves trying to balance a gigantic seesaw, nearly 700 feet long. An airship adrift, like a submarine vessel submerged and at rest, is very sensitive in its longitudinal trim, for being wholly immersed in the sustaining fluid, longitudinal inclination cannot

be accompanied by that movement of the center of buoyancy which gives longitudinal stability to a ship floating upon the surface of the water. For five minutes or more we ran or scrambled forward and aft along the keel, vainly striving to check the oscillations of the ship; at times the inclination was so great that we lay upon our stomachs along the keel walkway and climbed up it by clinging with hands and toes to the side lattices or other transverse members.

Meanwhile the engineers struggling with the six big Packard engines in the various cars had performed miracles. Hitherto it had been held that two men were necessary to start one of these engines; but on this occasion there was only one man to each engine, and most of them had had but little experience with the engines. Yet in a few minutes the welcome roar of the engines was heard one by one, and the ship gathering steerage-way was got under control, and the wild pitching was stopped by steady and skillful hands operating the elevators (i.e. horizontal rudders).

THE dropping of all ballast had initially given the airship an excess of buoyancy over weight, and she had risen into the air; but now so much gas had escaped from the two torn gas cells in the bow that the weight was in excess, and the ship was being kept aloft by the power of the engines and by pointing the bow upwards by means of the elevators. It was necessary to restore equilibrium of weight and buoyancy by dropping weights overboard. Three gasoline tanks in the keel, each holding 113 gallons of gasoline and weighing over

700 lbs. were dropped. This was accomplished by the simple expedient of cutting a wire with a pair of pliers, and as each tank slid downward between the supporting girders, a guillotine arrangement neatly severed the connecting pipe, and the tank tearing through the fabric cover of the airship at the side of the keel walkway dropped into the darkness below.

The feat of dropping the gasoline tanks was performed with dispatch by Lieutenant Commander Deam, the Chief Engineer. At the first tank I played the humble part of holding an electric hand light to illumine the operation. The tank as it dropped out was supposed to tear off a circular patch lightly stuck to the outer cover, leaving a hole for the tank to fall neatly through; but this part of the proceeding failed to come off according to schedule, and a large area of the fabric was badly torn, leaving a great hole into which the wind rushed, still further tearing the cloth. I was afraid that a large section of the fabric would be torn loose and blown aft to become entangled in a propeller, causing a further disaster, and as Commander Deam moved on to the next tank I lay down upon the twelve inch wide walkway of the keel, and gazed through the

gaping hole into the murk below, while I held on with both hands to the torn and wildly flapping cloth. It seemed a long time before a rigger came along with some string and tied the pieces to the structure so that they could not blow away and damage the propellers. Then I helped the rigger tie up the fabric which had torn in a similar manner where another tank had been dropped.

After this I went along to the crew's quarters in the keel amidships. Here, an engineer officer, jealous perhaps that his precious gasoline tanks should have been chosen for jettisoning, was busy throwing various odds and ends overboard. I offered to relieve him of this job so that he could give all his attention to his engines. I threw overboard some pieces of wood, and then I realized that the ship was down by the head and maintaining her altitude. Being an airship designer I knew that the ship could not possibly be in this condition unless there was an excess of buoyancy rather than of weight, so I took it upon myself to desist from throwing anything more overboard, and I learned later that I had acted rightly.

Meanwhile, Lieutenant Mayer, who seemed to be



The crew of the Shenandoah, a part of which group was adrift with the runaway airship upon its spectacular flight through the night. It was through their acts of unprecedented heroism, navigating skill, and noble effort that brought the badly damaged Zeppelin safely to her hangar after an all-night fight with the gale.

Left to Right, they are: Bottom Row—Major P. E. Van Nostrand, Air Service; Lieut. Command M. R. Pierce, U. S. N.; Captain A. Heinan (German); Commander J. H. Klein, Jr., U. S. N.; Col. G. Hall, Air Service; Commander F. M. McCrary, in charge of ship; Commander R. D. Weyerbacher; Lieut. Col. A. G. Fisher, Air Service; Lieut. Commander J. M. Deam, U. S. N.; Lieut. Commander I. Hancock, Jr., U. S. N. Second Row, Left to Right—Capt. W. Kepner, Air Service; Lieut. C. V. Whittle, U. S. N.; Lieut. Z. W. Weeks, U. S. N.; Lieut. R. J. Miller, U. S. N.; Lieut. A. R. Houghton, U. S. N.; Lieut. L. E. Mueller, U. S. N.; Lieut. J. C. Arnold, U. S. N.; Ensign E. W. Sheppard, U. S. N.; Lieut. H. V. Wiley, U. S. N.; Lieut. E. H. Kincaid, U. S. N.; Lieut. C. E. Rosenthal, U. S. N.; Boatswain C. C. Gittens, U. S. N. Top Row, Left to Right—Lieut. J. H. Gowan, U. S. N.; Lieut. W. J. Reed, Air Service; Lieut. J. R. Allen, U. S. N.; First Lieutenant D. L. Hutchins, Air Service; First Lieutenant O. J. Anderson, U. S. N.; Lieut. J. F. Tyler, U. S. N.; First Lieutenant H. G. Roland, Air Service, and Ensign C. E. Bauch, U. S. N.

everywhere in the ship this eventful night, had gone into the damaged bow with two men and had secured the flapping fabric of the ruptured gas cells and tied up the pieces so that they formed a kind of wind screen to protect the foremost uninjured cell, although the wind still blew into the great cup formed by the broken bow and the outer cover of the hull abreast the deflated cells, tremendously impeding the progress of the ship. Only men of extraordinary nerve and courage could have worked in the bow of the ship, climbing among the girders and handling the great areas of flapping fabric; but Lieutenant Mayer and his men did it and saved the SHENANDOAH.

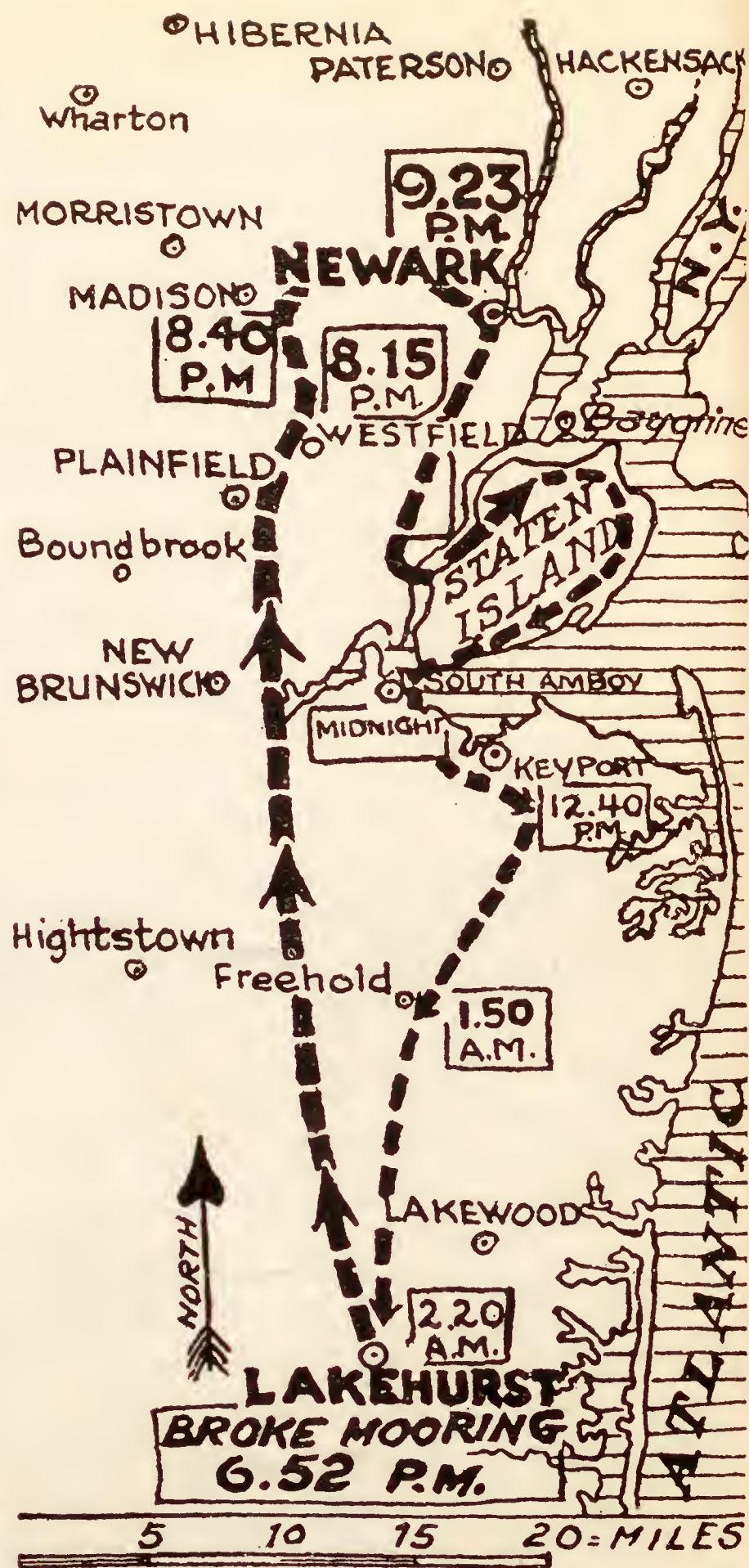
THE ship was now sufficiently lightened, but the center of buoyancy was too far aft of the center of gravity; and to correct this, oil cans and other weights were carried aft and tied to the girders in the keel near the stern. Ordinarily, walking along the keel is quite easy because the outer cover makes it impossible to look down to the void below, but now so many holes had been torn in the cover that in many parts of the keel the ground below was all too clearly seen, and walking along with a burden of oil cans was far from pleasant.

At this time I had no idea that the top fin had failed, although Lieutenant Mayer had been in the stern and seen it breaking up when the ship was torn from the mast, and had immediately gone forward and reported the fact to Commander Pierce, the commanding officer. After the completion of the task of moving sufficient weights aft I found myself farther aft in the keel than anybody else, and hearing a great noise of flapping canvass, I set out to investigate. I walked aft through the keel and down into the bottom fin, for at the stern the walkway passes out of the hull and into the fin where it is just wide enough for a man to pass, and thence up the ladder into the extreme stern of the ship, aft of the fins, and then up another ladder. At the top of this last ladder I opened the sliding hatch and looked out along the top of the ship. There against the moonlight sky I saw the broken girders and a few shreds of cloth which were all that remained of the top fin. This was the only real shock I had that night.

I closed the hatch and climbed down the ladder and went forward, and down into the control car for the first time since we had broken away from the mast nearly four hours before. I told Pilot Heinen of the discovery I had made about the fin, and he replied in the calmest voice, "Yes, we know it." I felt easier.

In the meantime, the air had been washed clean of all radio so that the SHENANDOAH might be in undisturbed radio communication with Lakehurst. It almost gave us swelled heads to learn that the great American institution of radio broadcasting had been wiped out for a night on our account.

This was the first time I had been in the control car in flight when it was not uncomfortably crowded. I



From the New York "Evening World"

Map showing course of the treacherous flight pursued by Shenandoah while battling her way from being swept into the sea by the terrific gale.

remarked that I enjoyed this circumstance, and Lieutenant Kincaid was so pleased that he ordered the radio operator, Radio Gunner Robertson, to send word to Lakehurst that the control car was more comfortable than it had ever been known to be; and this message broke the tension that had prevailed at the Station.

Really it was they who remained behind, and not we in the ship who suffered anxiety that night; and I think

(Continued on Page 32)

How Altitude Flights Are Measured

By F. B. Newell

Instrument Branch, McCook Field

It is not a fair comparison to assume that an automobile failing to negotiate a certain steep hill on a wet road is less powerful than the rival auto which manages to make the hill when the road is dry.

It need not be explained, therefore, that the wet road provides less traction than the dry road and any comparison concerning the ability of the two autos should be made under similar conditions as to road surface.

Just as an automobile is dependent upon the condition of the road for traction, the thrust of an airplane's propeller and, therefore, the ability of the airplane to climb, is dependent upon the density of the atmosphere. The less slippery the hill, the more power has the automobile, and, likewise, the denser the atmosphere aloft, the higher the airplane can climb. There is consequently considerable misinterpretation regarding the "ceiling" of certain airplanes compared with others of similar design, since it generally happens that tests for altitudes of the various makes of planes are conducted at separate periods, perhaps months apart, and consequently under vastly different atmospheric conditions, which, as just explained, have considerable to do with the performance of the machine. If a comparison is to be made, the conditions under which the airplanes fly should be the same. If the

conditions cannot be duplicated, then the comparison should be made upon the basis of the lowest density reached, since it is the density which limits the performance.

It might be well to explain here just what is meant by the "density" of the atmosphere. The absolute density is the weight of a certain volume of air and

is usually expressed in per cubic foot or grams per cubic centimeter. This weight varies inversely as the absolute temperature (273 plus the temperature in degrees C) and directly as the pressure. Therefore with any given combination of temperature and pressure, the density is always the same, except for a slight variation due to the moisture in the air. The density at a temperature of 0°C and a pressure of 760 mm. of mercury is taken as standard or 100%



AMERICA'S THREE ALTITUDE CELEBRITIES

Left, Lieutenant John A. Macready; Center, Lieutenant Leigh Wade; Right, Major R. W. Schroeder.

and the ratio of the density under other conditions, to this is the relative density and is expressed in percents.

The temperature, pressure, and humidity of the atmosphere at any altitude are always changing, and, since the density is dependent upon these three factors, it, also, is changing. Instruments carried by sounding balloons and kites have been used to record the variations in the pressure, temperature, and humidity up to very high altitudes. The pressure variations are less at the lower

altitudes than at the higher, while the temperature, vapor pressure, and density variations are greater at the low altitudes. Fig. 1 gives a quantitative comparison of these seasonal variations for sea level and 15,000 feet. The pressure at sea level in July is 4.4 mm. of mercury less than it is in January, while at 15,000 feet it is 20.6 mm. greater. The temperature at sea level in July is 37.9 degrees hotter than in January, while at 15,000 feet it is only 16.6° hotter. Above 40,000 feet the tem-



Lieutenant Macready, altitude ace, in his togs and ready for a dash into the frigid upper ether.

perature is almost constant at -55° during all seasons. The vapor pressure at sea level is 15.05 mm. greater in July than in January, while at 15,000 feet it is only 1.63 mm. greater. The density as computed from the other three factors is at sea level 14.1 percent greater in January than in July, while at 15,000 feet it is but 0.6 percent greater.

Since the highest altitude which an airplane can attain is limited by the density, which in turn is dependent upon the pressure *and the temperature*, the abilities of two airplanes cannot be compared upon the basis of pressure alone. It would be better to compare them by stating the lowest density reached or, by some empirical formula, convert this density into the more familiar units of altitude in feet.

The altitude according to the F.A.I. standard is computed by the formula:

$$A = 16.4 (3064 + 1.73P - 0.0011P^2) \log \frac{760}{P}$$

in which A is the altitude in feet and P is the pressure

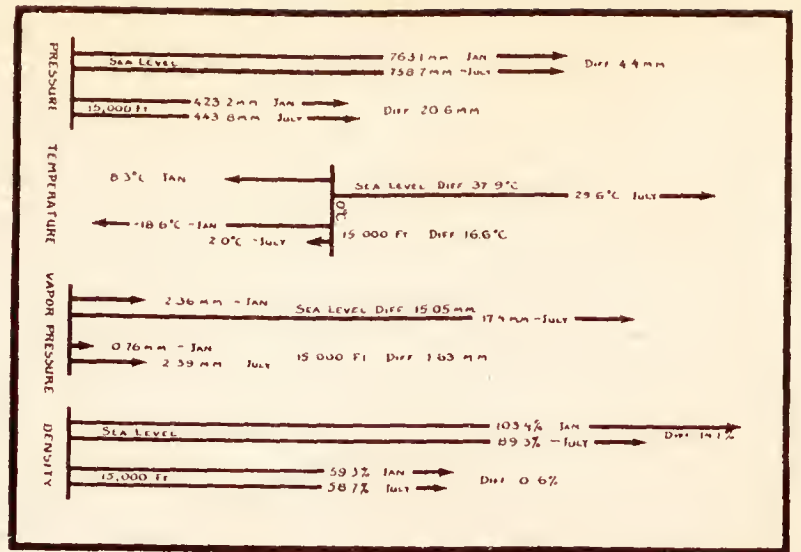
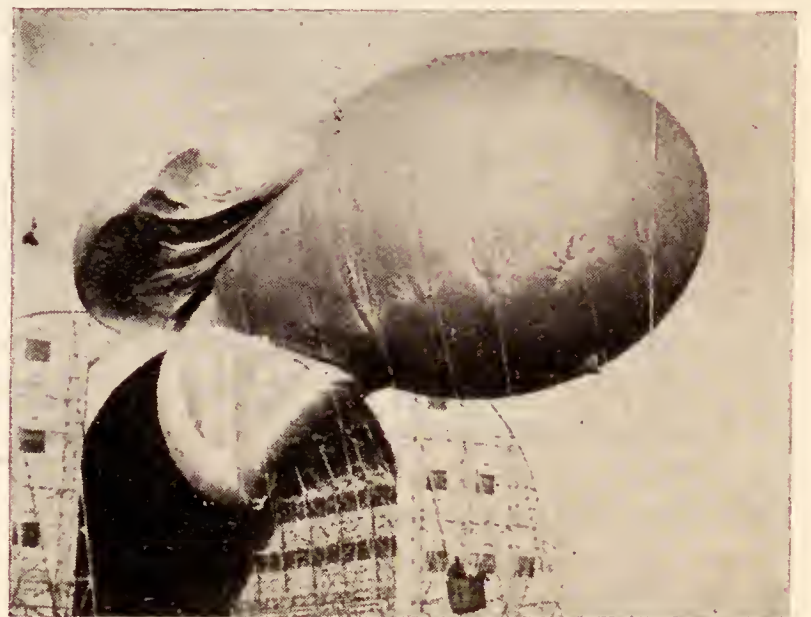


Fig. 1. Comparison of atmospheric conditions during January and July at sea level and at 15,000 feet.

in mm. of mercury. The altitudes computed according to this formula are approximately correct for central United States *only during the winter months*. This is due to the seasonal temperature changes. Even if they were the correct altitudes for all seasons, they would not be a fair basis for comparison of airplane performance because the density at each altitude varies according to the season, thus making it possible for an airplane to climb to a higher altitude in winter than in summer.

If an airplane could remain in the air a whole year, always trying to climb higher, it would fly all the time at a constant density but not at a constant altitude. If there were on the instrument board, an altimeter calibrated to indicate the F.A.I. altitude and it indicated 15,000 feet in January, it would, as the months rolled by, show a decreasing altitude, until in July it would indicate but 13,000 feet. As the weather became colder, it would show an increasing altitude, until in January it would again indicate 15,000 feet.

To illustrate the meaning of the above statements, an actual flight will be taken as an example. On October 25, 1923, the Barling Bomber, piloted by Lieut. Harris, left Wilbur Wright Field for an altitude flight with a load of 2,000 kilograms. Suspended by shock-absorbing cords



A high altitude balloon used for experiment work by U. S. Air Service.

was a barograph which recorded the pressure of the atmosphere in which the bomber was flying. After calibration, the barograph record showed that the true pressure at the ceiling was 588.9 mm. The F.A.I. altitude corresponding to this pressure is 6,722 feet.

The minimum density reached can be computed by the formula:

$$D = \frac{359 P}{273 + T}$$

where D is the relative density in percent, P is the pressure in mm. and T is the temperature in degrees C. This formula gives the density for 588.9 mm. and 5° C as 76.6 percent. In Fig. 2 the center arrow shows the F.A.I. altitude to which the bomber went on October 25, namely 6,722 feet. The arrows at the left and right

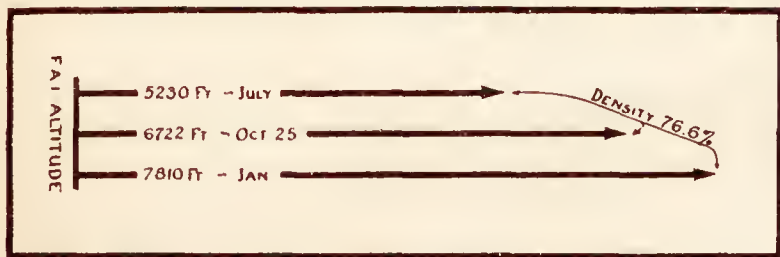


Fig. 2. Diagram showing how the season of the year affects the F.A.I. altitude at which a certain density is found.

show the altitudes to which the bomber would have gone in July and January, respectively, in order to reach the same density. In July the altitude would have been 5,230 feet, which is 1,490 feet (22 percent) less than that attained in October, while in January the altitude would have been 7,810 feet, which is a gain of 1,090 feet, or a little over 16 percent.

IN the N.A.A. rule book is the statement that Lieut. Maeready attained an altitude of 34,509.5 feet at Dayton on September 28, 1921. He must have used an exceptionally sensitive and accurate barograph to record to 0.015 of 1 percent. If the flight had been made on September 28, 1909, over Omaha, Nebraska, to the same pressure attained in 1921, the density would have been 28.3 percent. If the flight had been made on September 27, 1909, to the same density, the F.A.I. altitude reached would have been 850 feet higher. This shows that from one day to the next, the atmospheric conditions might change as much as 2 percent. Furthermore, the accuracy with which these measurements can be made is surely not less than 0.1 of one percent.

IF a series of aerial photographs are taken in January of a tract of land whose elevation is 1,000 feet above sea level when the altimeter indicates 11,000 feet, these photographs will be taken from an actual altitude of 9,500 feet above the ground. If the same series of photographs is taken in July when the altimeter again indicates 11,000 feet, it will be taken from an actual altitude of 10,400 feet. This difference of almost 10 percent is due to the seasonal changes in the temperature

of the atmosphere. The altimeter pointer is actuated by a pressure element alone and the altimeter is calibrated according to a pressure-altitude formula similar to the F. A. I. formula. The indication is the isothermal altitude, *i. e.*, the actual altitude if the mean temperature below the airplane were +10° C. The actual altitude can be determined within 2 percent by the pressure and the temperature. During November, December, January, and February, the altimeter indicates too high at all altitudes and above 20,000 feet it always indicates too high.

The dials shown in Fig. 3 show how accurate the present altimeter is for indicating the exact altitude. At higher altitudes, the discrepancy is still greater. Several methods of overcoming this difficulty are being worked out in the Instrument Branch at McCook Field, Dayton, Ohio. It is possible to make an altimeter which will indicate the true altitude within a few percent. In winter the present altimeter indicates 5 percent too high at 10,000 feet and 10 percent at 30,000 feet and in summer it indicates 3½ percent low at 5,000 feet, correctly at 15,000 feet and 5 percent at 30,000 feet. If the yearly average pressures were used to indicate altitude the errors would be 5 percent high or low, depending upon the season. This applies only to the central part of the United States.

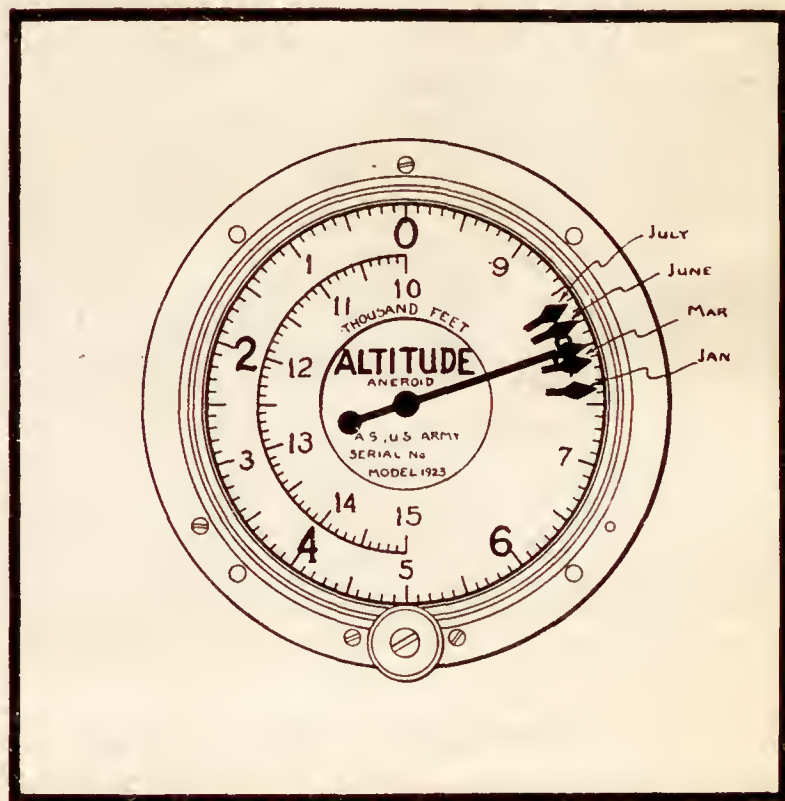


Fig. 3. Altimeter showing the actual altitudes during the several months when the pointer indicates 8,000 feet.

The meteorological data used in making most of the deductions in this article were obtained at Drexel, Nebraska. If such data were obtained at McCook Field, it would be possible to forecast the best day for Lieut. Maeready to make his next altitude flight. In general, it might be said that if the F.A.I. continues to use the present standard, the best time to make low altitude flights with load-carrying airplanes is in January, while the best time to make high altitude flights is in February.

There are also local conditions which make one day better than another.

AFTER an airplane makes an altitude flight, the first altitude announced is that indicated by the altimeter, namely, the isothermal altitude. It is always greater than the F.A.I. altitude and is most always greater than the actual height. When the altimeter indicates 10,000, 20,000, and 30,000 feet, the F.A.I. altitudes are, 9,600, 18,500, and 26,900 respectively.

One of our tasks now is to develop a new altimeter which will indicate the true altitude in all climates and during all seasons. Instead of using only barograph records to compare airplane performance, simultaneous records of pressure and *temperature* or records of density should be used.



AERIAL HOBO COMPLETES CROSS-COUNTRY TRIP

Lieut. C. C. Moseley, Commanding Officer at Clover Field, Santa Monica, Calif., is shown above at the left, greeting Lieut. Leonard Thomas, Adjutant 478th Pursuit Squadron of Clover Field. Without carfare to carry him to Clover Field from Mitchel Field, Long Island, Thomas "hoboed" his way across the continent, begging air rides along the way. The distance of 3,500 miles was covered in 36 hours' actual flying time.

A NEW ITALIAN SEMI-RIGID AIRSHIP

Work is in progress at the Stabilimento Construzione Aeronautiche for the construction of a new type of semi-rigid airship of 45,000 cubic metres capacity, which it is claimed will be the largest semi-rigid ship in the world. No information regarding her characteristics are known except that her range is estimated at more than 5,000 km. (3,127 miles) and that it is to be a civil airship.

A LONG FLIGHT IN SOUTH AFRICA

On Jan. 4 a South African Air Force airplane carrying as passenger a representative of the Cape Times flew from Cape Town to Pretoria, a distance of over 1,000 miles in 10 hours, five minutes flying time.

This at any rate shows the advantage of an air mail service, as the fastest trains take something like thirty-six hours.

Mrs. Mason M. Patrick, wife of Major General Patrick, Chief of the U. S. Air Service, during the officer's recent inspection trip to the Panama Canal zone, expressed a desire to cross the Isthmus by air.

The request was granted and Mrs. Patrick with a party including Major and Mrs. Raycroft Walsh and Col. and Mrs. Davis flew the distance of fifty miles which marked the first trip ever taken by women over this region.

A NEW SERVICE IN THE ARGENTINE

On Jan. 2 the Sociedad Rio Platense de Aviacion began a regular passenger and small service between Buenos Aires and Montevideo. The company is receiving a subsidy of 4,500 pesos (375) per month from the Post Office and the War Ministry.

The Sociedad Rio Platense is a purely Argentine company in so far as capital is concerned but the personnel and most of the equipment is British. For the Buenos Aires—Montevideo service—Vickers Viking amphibians (Napier Lion engines) are being used.

AN AIR LINE TO THE EAST

A meeting of government authorities and aeronautical experts was held on Dec. 27 at the Chamber of Commerce, Milan, in connection with the establishment of an air line to link up Italy with the Levant.

The line is to be operated by an Italian company which has been formed with sufficient capital, and it will be supported by the Commissariato d'Aeronautica by means of a subsidy based on the miles flown and the cargo carried.

The line will operate at first, between Brindisi—Athens—Smyra, and Constantinople with the future extension to Alexandria and Cairo for connection with the Cairo-Bagdad service and also to the Black Sea countries.

Presumably the service will be operated entirely by flying boats.

Two air service reserve squadrons consisting of eighty men from the States of Indiana and Kentucky will go through a course of training at Wilbur Wright Field some time this summer. The squadrons consisting of fifteen officers and twenty-five enlisted men each, will report for duty from Schoen Field to Major A. W. Robbins, commanding officer of Wilbur Wright Field.

The course will last fifteen days and include all modern war time tactics in the category of the U. S. aviator.

Some 480 separate articles are included in the special supply boxes which are being consigned to the various supply stations along the round-the-world route of the Douglas World Cruisers.

Not so many weeks ago 300 military airplanes flew over Rome, Italy, in the most awe-inspiring aerial spectacle ever witnessed in that country. The premier became so impressed upon beholding the great fleet of airplanes dotting the sky, that he immediately issued a statement to the public to the effect that Italy's air forces would be more than doubled within the year.

Putting "Safety First" Into Flights of New Aircraft

PROGRESS cannot be halted by loss of human life. Each stage of human advancement has exacted its toll, but keeps moving forward at a rapid pace. The skeptics are always with us and, unfortunately, more normal people have been skeptical toward aviation than toward any other science, although the phenomenal progress of aviation and the individual accomplishments of its pilots are now history.

Experience in test piloting is invaluable, not only as a basis for making comparisons, but to be mentally alert to the peculiar characteristics which are inherent in individual planes. Decisions as to whether a plane is adapted to the type of work for which it is designed, and also constructive criticisms on the general design with suggestions for improvements in the later production models are made by the test pilots following



" . . . The thrilling exhibition stunts of yesterday are the primary maneuvers of the pursuit school today. . . "

The dare-devil and circus performer have no place in aviation today. Everyday flight is commonplace, the thrilling exhibition stunts of yesterday are the primary maneuvers of the pursuit school today. Thus has this new science advanced. Today safety is paramount, every known means of making flying safer is being exploited and developed, and the accidents of the past are serving as our lessons for future safety.

The initial flight of any new airplane involves some element of risk, but owing to the present fund of experience and knowledge gained through careful observation and study of the causes of unsuccessful flights, this hazard is not as great as heretofore.

the trial flights.

Test pilots' opinions depend most upon their sense of "feel" which is their acute sense of balance co-ordinated with an instantaneous subconscious action of the muscles to obtain equilibrium. This sense is also manifested in the various degrees of resistance necessary to govern the movement of the plane, or the sluggishness of the plane to answer to the controls. It is a subtle characteristic, but strangely enough the opinions of test pilots usually agree regarding the "feel" of a plane.

Safety in flight may be divided into two phases, the first depending upon the ability of the pilot himself,

the second depending upon the safety of the plane. It is the latter that the pilot is particularly interested in, although many initial flights are very discouraging to the pilot.

THE procedure in the initial flight is usually in progressive steps. The first steps consist of the pilot familiarizing himself with the location of the instruments, the engine controls, the fuel system, and

to locate them in the air, so familiarity with their location must be gained before actual flight is attempted.

In planes of large carrying capacity and also those of the multimotored type, it is necessary for the pilot to know what load he is carrying and also the distribution of the load. Heavy armament equipment or other weighty factors seriously affect the balance of the plane in flight, and as these loads are located with respect to



A good illustration of the extent of "safety first" measures taken by the Air Service in testing out new aircraft is found in the program followed in the first tests of the Barling Bomber, largest airplane in the world. Fully a month of various ground test work and adjustments were made by the mechanics even before a single "hop-off" flight was attempted with the huge ship.

the airplane controls. The pilot usually climbs into his flying suit and parachute, seats himself in the cockpit and determines the following points: Can he reach the rudder bar comfortably? Do the controls function properly? Do they bind or are they sloppy? Is the stick or wheel in a comfortable position with the elevators in neutral? Can he reach the stabilizer adjustment? Has he good visibility from the cockpit? Can he reach the engine switch and spark and throttle levers with his belt buckled? Can he easily see all the instruments? These items are of vital importance, because in case of necessity the pilot may not have time

the center of gravity of a fully loaded plane, their absence might prove dangerous if not compensated for in some manner. A new plane is usually flown light, but the load distribution must be considered.

The engine is always tested by the pilot on the ground to determine the R.P.M. and the general functioning of the engine instruments. The pilot also tries out the fuel system, running on the main tank, then the emergency, and with the present system, overflowing the emergency from the main.

The first test consists of taxiing over the ground and determining whether the plane is easy to control

and keep in a straight line, or whether it exhibits any tendencies to turn or ground loop. This item is of great importance, particularly in planes of the pursuit type, which require high landing speeds and should not show any tendencies to ground loop.

The next step is a series of short hops a few feet off the ground to determine the longitudinal balance with power off and power on, and also to gain an idea of the gliding qualities and landing speed. This is usually repeated a few times, and if everything functions satisfactorily, the plane is then taxied to the extreme end of the field.

The most important thing to remember in making the first flight is to "Take All of the Field." Should the motor quit it is always safest to land straight ahead, particularly with a heavy plane. It is not safe to turn back into the field under 500 feet, although the temptation to do so is great. The safest way to take off is along one side of the field so a slight turn can be easily made and a cross wind landing executed should the motor quit.

ON the initial flight the pilot always gains sufficient altitude before attempting to turn, and the first turn is usually made a very gentle one, just enough to keep within gliding distance of the field until a few thousand feet altitude is reached. Gentle turns from one bank to another are then attempted. This enables the pilot to gain some idea of the aileron action, whether they respond more readily going in or out of right or left banks. The ailerons are watched during these maneuvers to observe any great deflections or flutter; the action of the rudder is also noted and the amount of correction necessary to overcome torque and whether it is sensitive or whether small movements of the rudder have any effect. These observations are necessary because the rudder location and area are

greatly influenced by the shape of the fuselage and the location of the rudder in the slipstream.

Several level speed courses are then attempted at different R.P.M. and also various climbs at different angles of incidence and air speeds. These maneuvers are necessary to determine the longitudinal balance and are particularly important in monoplanes, as any wing fluttering, wing twisting, or buckling (catastrophic instability), which this type often exhibits is carefully observed. The stalling speed is also observed and any inherent tendency to fall off on either wing.

When the pilot is convinced that the controls of the plane act normally, he then flies some high speed courses with wide-open throttle, gradually nosing the plane over and increasing the air speed. This will show up any tendency of the plane to "hunt" from side to side, which fault is prevalent among many high speed planes. The plane is gradually put over into a dive and then pulled out to determine the action of the elevators, how quickly they act, the amount of pull necessary, and whether the plane increases in nose heaviness. Aerobatics are not usually attempted on the first flights, the pilot's mind being concentrated on the flying qualities and balance of the plane.

WHEN new types of engines are flown, the attention is concentrated on the functioning of the engine, its acceleration, vibration periods, smoothness of operation, the steadiness of the engine mounting, and any cooling difficulties.

Designers and engineers are gradually overcoming their academic aloofness and gaining more respect for the test pilot's opinions for, after all, the performance, flying qualities, and strength of a new plane determine whether it is safe and should be adopted, and the test pilots are the ones to determine these qualities in the

(Continued on Page 42)



Winter scene at the McCook Field Propeller Test Department. The propellers turned at a tremendous speed on the test block under a stream of water formed a beautiful ice formation during a recent cold snap.



OBREGON'S PLANE DESERTS HIS CAUSE AND JOINS DE LA HUERTA

This plane was ordered by President Obregon to attack the rebel forces of De La Huerta. However, the pilot and plane deserted the cause and joined the De La Huerta force. The plane is an all-metal Junker design.

SLIPSTREAMS GO TO FAR CORNERS OF EARTH

Due to the presence of such a great number of Dayton advertisers in the Slipstream magazine, it may be the impression of some that the publication is strictly a local periodical with a local circulation alone. This is quite wrong, for although Slipstream naturally has a considerably larger average circulation in Dayton and surrounding community the magazine carries an extensive and steadily increasing worldwide mailing list.

Aeronautical magazines, perhaps more than most other publications, have a widely scattered circulation and it is quite interesting to learn how copies of Slipstream reach the out-of-the-way nooks and crannies of the old earth's surface. It may be that we receive a signed subscription blank with a check from some little salt town far out on the arid western planes and we find that at some time or other a U. S. aviator had dropped off a copy of Slipstream during an inadvertent landing for fuel. Again, we receive a missive from the bleak fastnesses of Labrador and learn that some officer had carried a copy there while upon an official mission to this region for the Government. Upon another occasion we received a subscription from an aviation enthusiast down in the Panama zone and are amused to find such a postmark as "CoCo Solo." The U. S. Air Service furnishes a sufficient number of subscriptions to supply all of the U. S. Air Service posts where troops are located both in this country and abroad. This too, furnishes another means of helping broaden the circulation of Slipstream.

Since it is the hobby of aviators to tuck away such things

as aviation magazines, photos, letters, etc., in the cockpit of their plane, this furnishes a medium of transportation which often reaches the half forgotten settlements far from the main thoroughfares of civilization and recalls the vast future possibilities which the airplane holds toward linking these far-flung spots to the affairs of daily progress.

A DANISH AIR LINE

From April 17 to Oct. 17, 1923, the Dansk Luftfartsselskab A/S. of Copenhagen, operated a service between Copenhagen and Hamburg with three D.H.9s (240 h.p. Siddeley "Puma" engines).

Of the 311 flights scheduled 304 flights were accomplished and only one flight was cancelled due to engine failure. A total of 89,480 kilometres were flown in 633 flying hours and 414 passengers and 6,399 kgs. of cargo and mail were carried, making a total of 40,590 kgs. of commercial load.

The service is to be resumed this year.

NAPLES TO MADRID

On Nov. 5-7 a Junkers monoplane piloted by Herr Koscielnny flew from Naples to Madrid, a distance of 1,750 kms. (1,094 miles).

He left Naples on the 5th and flew via Cagliari, in Sardinia, Palma and Majorica to Barcelona. Here wheels were substituted for floats and the flight continued to Madrid where the machine arrived on the 7th.

THE STORY OF THE SUPERCHARGER

By David Gregg

Supercharger Research Dept., McCook Field

IF you had been a visitor to McCook Field one clear day in September, 1921, you might have wondered at a small, dark bearded man lying flat on his back in the oily grass in front of the hangars, gazing into space. For a moment he lies still, then jumps to his feet and approaches our group. We introduce him as Doctor Sanford A. Moss, developer of the supercharger in this country.

Back in 1917, when the Germans were making one of their terrific drives, and the air looked dark for the Allies, the Doctor was called upon to develop a device

calibrated, and soon the news spreads about that he reached a true altitude of over 34,000 feet, almost seven miles above the earth, higher than man had ever been before. P-53 had another world's record to her credit, and McCook Field celebrated.

This flight was a convincing demonstration of the value of the supercharger, for without it, the LePere had never gone higher than 20,000 feet. Since 1917 the supercharger had been put through a vigorous course of development at the hands of Doctor Moss and the pilots, engineers, and personnel of the Engineering



The famous altitude plane of the U. S. Air Service, LePere P-53, equipped with supercharger.

that would maintain the power of airplane engines at altitude, and give our aviators an advantage over their adversaries. Chateau Thierry and Belleau Woods paved the way for an Armistice before the supercharger, as this device was called, could be placed in active service.

But to come back to the Doctor and his daylight star gazing. A little group of people had gathered about in front of the hangars, the number gradually increasing. Every one seemed animated by a thrill of suppressed excitement—Macready was piloting old P-53, veteran of two world's altitude records, in an attempt to establish a new one. He had been up over an hour when his plane was seen gliding into the field. The crowd increases as he lands, and gathers about him as he pulls off his heavy flying togs. "How high did you get, Mac?" some one calls. "Oh, pretty high, I guess," answers Mac with a grin. His instruments are being

Division. Many and interesting were the problems encountered; most of them have been met, and successfully overcome.

PEOPLE wonder what a supercharger is, and just what it does. An airplane engine loses power as it reaches higher altitudes—the air is less dense up there, and like a man climbing a hill, the engine literally puffs for breath, for on the weight of air that it sucks in at each stroke depends its power. At sea level a Liberty engine will develop 400 horse power, at fifteen thousand feet it will give but 200, and at 25,000 feet the same engine can only deliver eighty-seven horse power, small fraction of its original output. No wonder something is needed to keep up its "pep." This is the function of the supercharger—it is a high speed centrifugal air pump driven by an exhaust gas turbine. When the charge in the engine cylinder has done all the useful work it can there, it still has power left in it. This the

supercharger turbine converts into useful work, driving the compressor that pumps air to the engine at constant sea level pressure, and so maintains its original power. For those who enjoy diagrams, Fig. 1 will show how a supercharger works, and how it is connected to the engine.

Our first and most serious trouble was getting a material that would stand up under the high temperature, surrounded by white hot exhaust gas. Fig. 2 is a photograph taken at night of a supercharger—the nozzle box and manifolds are sizzling hot, and the turbine wheel is spinning over at 22,000 revolutions per minute surrounded by gases whose temperature is 1500 degrees Fahrenheit. No wonder pilots thought that we were offering them a combination cookstove, blacksmith forge, and flying junk shop. But one by one the various troubles were met. Flexible manifold connections, shown in one of the accompanying photographs, helped overcome warped and cracked joints and leaky connections. The tips of the turbine wheels were ground off to lighten the dead weight, and to decrease the stress due to centrifugal force. Then came the design of the side type supercharger. The turbine wheel was overhung, and exposed to the full blast of the propeller. The compressor casing, mounted sideways, cut down the head resistance. The whole installation

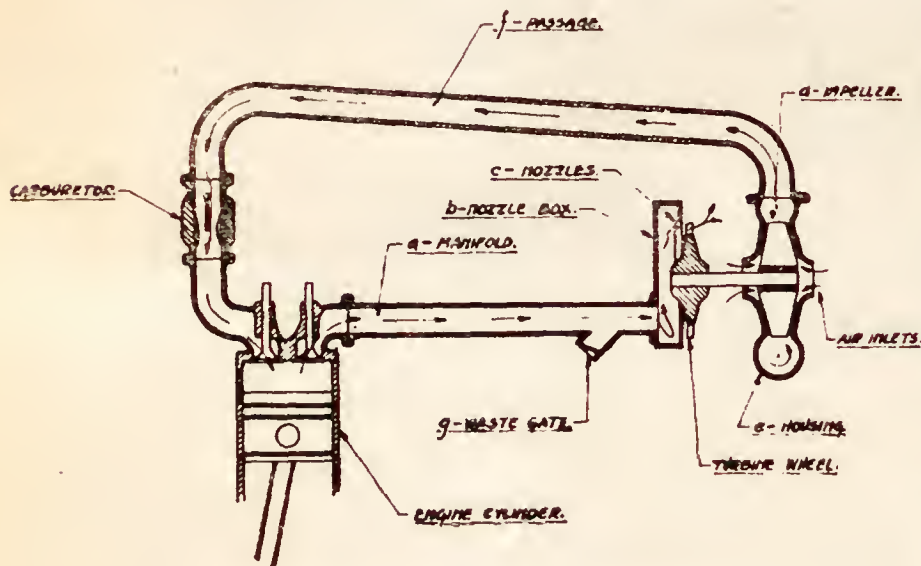


Fig. 1. Diagram of Supercharger.

was simple, easily adjusted, and best of all—it worked. The first outfit was run for over fifty hours without the slightest attention. It is now our standard type—reliable, rugged, and easily taken care of, it increases the performance of an airplane to a remarkable extent.

A special outfit, that has a great many interesting features, was designed for exceptionally high altitude flying and experimental work. It is the so-called 35,000 foot supercharger. In some ways it resembles the Form "B" supercharger, but the speed of the turbine wheel has been increased from 22,000 r. p. m. to 34,000 r. p. m. When the turbine and impeller of this supercharger were tested they were given an overspeed run

at 41,000 revolutions per minute. The tip speed of the impeller was 1880 feet per second, three-fourths the speed of an army rifle bullet. At this rate, a one pound weight, having its center of gravity at the center of gravity of one of the turbine buckets, would have a centrifugal force of 222,000 pounds or 111 tons. The



Fig. 2. Night photograph of a turbo-supercharger showing the white hot exhaust manifolds and nozzle box

weight of a bucket is .00959 pounds but even so the pull on each bucket is 1750 pounds and as the cross section of the bucket is a small fraction of an inch, the stress is very high. The turbine and shaft were machined from a solid forged mass of steel weighing 250 pounds. The finished weight of the turbine is only twenty pounds, eight percent of the original forging. A commercial compressor delivering the same amount of air as this supercharger does would weigh 5,000 pounds, and occupy a space of six feet by six feet by eight feet. One man can easily carry this supercharger about, yet at 35,000 feet it increases the power of the Liberty engine by over 300 horse power.

SPECTACULAR as many of the supercharger flights have been, they were made, not for altitude records, but to obtain scientific data from which the design of supercharger airplanes could be improved. On Sept. 27, 1920, Major Schroeder set out on such a flight using the original supercharger designed by Doctor Moss. Up through the clear air he climbed. At 25,000 feet his plane, though headed west at over 100 miles an hour, slowly drifted eastward. West winds were encountered whose velocity is estimated at 175 miles an hour. As he went higher a trail of white vapor streamed out behind the airplane as the moisture in the exhaust froze in the cold air. Frost collected on his goggles, and from time to time he tried to wipe them clear, and at the same time protect his eyes from the biting wind. His regular oxygen supply ran out, and he turned to his emergency tank. At 33,000 feet above earth his goggles frosted over completely, and as he attempted to clean them he suddenly realized that his emergency oxygen supply was exhausted. Reaching forward to his engine con-

trols, he lapsed into unconsciousness, and the airplane fell like a plummet for almost six miles, the time of fall being only two minutes and three seconds. Let us use the Major's own words for the rest of the story.

"My next sensation after losing consciousness was a terrific explosion in my head, and on looking around, discovered I was within a few thousand feet of the earth and over strange country. My eyes pained exceedingly and my hearing seemed to be gone. With a

The observations made by Major Schroeder on this flight have been of inestimable value to the Engineering Division, and formed the groundwork of a series of improvements that led to the present supercharger and the modern oxygen, fuel, and cockpit heating systems, which have made altitude flying safer, and far more pleasant.

L T. MACREADY'S flight, made a year later, was to test a new supercharger, designed as a result of



LaPere P-53, veteran of three world's altitude records. Standing in front of it are Lt. Macready, Dr. S. A. Moss, Capt. G. E. A. Hallett, and Adolph Berger, whose co-operation

made possible the new altitude record of 34,563 feet.

great effort I leveled the machine and headed west by locating the sun, trusting that I had been blown to the east by the strong upper current. After about fifteen minutes' flying I found myself over Wilbur Wright Field, but by this time my eyes were practically shut, and I was sure that a landing would be disastrous, and concluded that by going on to McCook Field my eyesight would recover. In a few minutes I was directly over McCook Field, but my eyes were worse than ever so I decided the best thing to do was to gain a little altitude and jump to safety with my parachute and allow the machine to crash. While these thoughts were passing through my mind I recognized the Post Hospital, and the only explanation I can give for making a turn, shutting off my motor and landing at this time, is that it was a favorite spot to glide into the field over the Hospital in everyday flying, and my location was purely a mechanical one. The wheels hit the ground and I found myself unable to move a muscle and with both eyes tightly closed."

Major Schroeder's experience. As the former flight furnished the groundwork for our present system, so Lt. Macready's observations were the basis of much of the refinement that has been effected during the last two years. Flexible manifold connections, better fuel and cooling systems, and an adequate system of heating the cockpit were the results.

Parallel with these tests, work was progressing on a Martin Bomber that was being equipped with superchargers. When it was completed it was put through a series of tests, not so much to see how the superchargers worked, as that was now better known, but to see what actual gain they made in the performance of the airplane to justify their use. On one of the early flights, the big bomber, which had never before reached an altitude of 14,000 feet, was flown with three men to 27,000 feet, almost double its former "ceiling," and established a new world's record for three passengers. A few days later the record was again broken. This time, while 24,000 feet above the earth, Captain Stevens

(Continued on Page 24)



An aerial view of the city of Dayton, Ohio, where the International Air Races will be held October 2, 3, 4, 1924. This enterprising city is showing the way in aviation activity for the United States.

Notes Concerning the Air Races of 1924

Dayton, Ohio, October 2, 3, 4

ALTHOUGH several months intervene before the date set for the International Air Races which will be held in Dayton, Ohio, this little city is even now all agog with interest over the coming event and is busily appointing committees which will start at once making things ready for the spectacular air classic of next October 2, 3, 4.

In order to formulate plans for handling the more than 250,000 people who are expected to visit the races, a meeting was called recently of the Housing Committee. It is anticipated that every hotel, rooming house, and private dwelling available will be needed to house the thousands of race enthusiasts, who will flock into the city. Tourists camps and Pullman cars will also be utilized, while it is planned to establish camps at Wilbur Wright Field and McCook Field to take care of the military officials who will attend the races.

B. Russel Shaw, chairman of the contest committee of the National Aeronautic Association, recently visited Dayton to confer with Frederick B. Patterson, President of the N. A. A., upon the disposition of the \$50,000 prize money designated by the executive and finance committee for the race winners. This sum is more than three times as great as the prize award money allotted at the St. Louis meet last year, and should be a big item in stimulating interest among speculative contestants for the Dayton races.

Provision was made for twelve events at this meeting with ample prize money for the winners of each event.

The list as approved by the N. A. A. is as follows:

"On-to Dayton" race, the first scheduled on the program, will be finished before the actual program opens and will be contested for by planes flown from any point more than 200 miles from the city of Dayton. The contestant must start upon his flight upon any date after September 20 and finish at Wilbur Wright Field after the morning of September 24 and before midnight of October 1.

Prize award will be based upon points of average speed, distance, horse power of engine, and number of passengers carried. The Dayton Chapter of N. A. A. will present a trophy which will become the permanent property of the winning pilot.

Liberty Bonds to the amount of \$3,500 will be apportioned among the first nine pilots finishing in the race. This will be a race open to civilians only.

The first event of the actual program will be held on the morning of October 2 and will be in the form of a free-for-all contest for civilian two-seater low-powered planes. Each pilot must carry a passenger, constituting a minimum load weight of 340 pounds. The race will go ninety miles over a closed fifteen-mile course. Prize awards will be allotted as follows: (Liberty Bonds)

First, \$1,000; second, \$600; third, \$500; fourth, \$400; fifth, \$300; sixth, \$200.

The second event of October 2 will be a similar free-for-all civilian pilot race carrying two or more passengers a distance

of 120 miles over the fifteen-mile closed course. Three thousand, five hundred dollars will be distributed as prizes as follows: (Liberty Bonds) First: \$1,000; second, \$700; third, \$600; fourth, \$500; fifth, \$400; sixth, \$300.

The Liberty Engine Builders' trophy race will be run as the last event of the first day, at 3:20 p. m. Liberty Bonds to the amount of three thousand dollars have been set aside for prize money for this event.

This race is open to both civilian and military pilots. A trophy is also awarded to each of the first three pilots finishing in this race. The race is flown a distance of 180 miles over the fifteen-mile closed course.

The first event of the second day will be run at 9:30 a. m. and is known as the Mulvihill Model trophy race. It is a contest scheduled this year for the members of the newly formed Junior Flying League of the N. A. A. Small, model airplanes propelled by rubber bands are launched by hand by the youthful contestants. Cash prizes totaling \$500 will be allotted to winners as follows: First, \$200; second, \$100; third, \$75; fourth, \$50; fifth, \$30; sixth, \$20; seventh, \$15, and eighth, \$10.

The second event of October 3 will be the Aviation Country Club of Detroit trophy race, starting at 11 a. m. The race, which is for planes of the light commercial type, will be run 120 miles over the fifteen-mile closed course. Prizes to the amount of \$1,000 for first, \$700 for second, and \$300 for third will be awarded on points of speed and points of general efficiency.

The Dayton Chamber of Commerce trophy race will be started at 2:45 p. m. October 3. This race will be held for large capacity planes of either civilian or military status. The distance will be 150 miles over the fifteen-mile closed course. First prize: (Liberty Bonds) \$2,000; second, \$1,000; third, \$700; fourth, \$300.

The Detroit News Air Mail trophy race for Mail Pilots is the first event scheduled for Saturday, October 4, the last day of the races. These planes will be required to have a speed of greater than ninety miles an hour. The race will be flown over a closed course of 31.07 miles, the race being for 186.42 miles.

Liberty Bonds will be awarded to winners as follows: First, \$1,000; second, \$800; third, \$700; fourth, \$600; fifth, \$500; sixth, \$400.

At 1:15 o'clock a race will be run for light civilian airplanes with points figured on speed and efficiency. Five thousand dollars worth of Liberty Bonds will be distributed to winners as follows: For speed—First, \$1,500; second, \$1,000; third, \$500; and fourth, \$200. For efficiency—first prize, \$800; second, \$500; third and fourth, \$200. The distance of the race will be fifty miles flown over a five mile course.

At 2:30 the Brig. Gen. William A. Mitchell trophy race will be run by military airmen. The distance this race is run is 124.27 miles over the 31.07 mile course. Trophy cups are awarded first, second, and third placers.

At 3:45 p. m. on Saturday the stellar event of the great meet will take place with the start of the Pulitzer trophy race for extreme high speed planes. A speed above 175 miles an hour is required of each entry. The planes will fly about 124 miles around the 31.07 mile closed course. Ten thousand dollars in prize money is set aside for this event to be distributed as follows: First, \$5,000; second, \$2,500; third, \$1,500; fourth, \$1,000.

A special feature race will be run on the second day of the big classic under the title of the Dayton Daily News Trophy Race. This race, held for civilians only, will be run at 2 o'clock, just before the Dayton Chamber of Commerce Trophy Race, October 3. Three thousand, two hundred and fifty dollars in prizes will be distributed to winners of this race as follows: First prize, \$2,000; second, \$750, and third, \$500. A beautiful trophy will also be given the winner to be kept in his personal possession for one year, after which time it is to be sent to the headquarters of the N. A. A.

Lieutenants Alex Pearson and W. H. Brookley of McCook Field have been named as army entrants for the Pulitzer speed races to be held in Dayton, Ohio, October 4, according to a report received at the Dayton post recently from the Office of the Chief of Air Service.

Considerable comment has been aroused in U. S. Air circles with the report that England is building a mysterious speed plane which will make more than 290 miles an hour, which she anticipates entering in the Pulitzer races.

Provision is made in the safety budget for the city of Dayton by the City Manager to provide for forty extra policemen and detectives for duty during the three days of the International Air Races. To this force it is expected that some 200 state troops will be added to help in managing and protecting the enormous crowds.

George S. Johns, air enthusiast and publisher of the St. Louis Post-Dispatch, returned recently from a mission to European countries where he has been inducing the foreign nations to enter planes in the International Air Races. His good services in this work have been highly complimented by officials of the N. A. A. Mr. Johns, no doubt, has paved the way for Frederick Patterson, president of the N. A. A., who has departed upon a similar mission to Europe, when it is expected definite assurance of foreign participation will be secured.

Date and site for the Jacques Schneider Cup Race will be announced about March 1, by the Contest Committee of the N. A. A. Several bids for the contest have been received, the most formidable one being that presented by Baltimore.

Efforts are being made by the Contest Committee of the N. A. A. to secure American entries for the Beaumont Cup Race to be held in France, June 22.

It would seem probable that our high speed planes would have a likely chance of coping big honors in this event.

The Curtiss Marine Trophy Races will be held at Miami, Florida, March 7, 8. Four events will feature this popular classic: the Miami Chamber of Commerce Cup Race and the Royal Palm Bombing Contest for the first day; the Flamingo Handicap Cup Race and the Curtiss Marine Trophy Race on the second day.

Dayton Daily News Trophy Race

The several thousand spectators who will come to Dayton this fall to view the International Air Races will be given an additional and very distinctive treat.

This will be the Dayton Daily News light airplane race which is being sponsored by The Dayton Daily News.

Permission to run the race was given by the Contest Committee of the National Aeronautic Association, which of itself is an epoch in aeronautical history in that there has never before been a race of this kind under official sanction of the N. A. A.

A committee of nine men who are experts in all matters pertaining to flight, has drawn up specifications for this contest. Whatever the conclusions of this committee will be, a race of small planes, single seaters, with a little power plant about the size of an ordinary motorcycle engine, in which economy of operation and performance will predominate, will be features.

U. S. Far Behind

It is pretty generally admitted that the United States is far behind European powers in the matter of commercial aviation.

In the consideration of specifications for the Dayton Daily News light airplane contest, the committee is giving thought to any and all phases of the airplane which will encourage its use commercially. A wave of popular enthusiasm has greeted the announcement of the contest, and the individual who does not realize to the full extent the far-reaching importance of the splendid work done by the army and navy pilots is able to understand what he sees.

In all probability, he will see a small plane given a limited amount of gasoline—a matter of a few gallons, fly around a given course, fifty, sixty, or seventy miles; he will see the tiny plane rise to 1,000 feet or more and will note that with

a few gallons of gasoline the plane has flown for an hour or an hour and a half.

Real Worth of Contest

With this in front of him, he will know that such a small plane can be used in his business, to make a hurry up trip from Dayton to its many surrounding cosmopolitan cities, and there lies the true and real worth of the Dayton Daily News light airplane contest. A decided awakening to the commercial possibilities of the airplane should result and the impetus thus given will be far-reaching in its effect for the good of the cause.

The educational value of such contest as proposed will overshadow the sporting element that will naturally enter into it. This feature of the race, however, will be something distinctly worth while to the spectators. It is tentatively planned to have the entire race, whatever the selected distance, run at Wilbur Wright Field so that all the tiny contestants will be continually before the people.

Under the terms of the donation, the management of The Dayton Daily News will give all the prize money for this year's event, together with a suitable trophy, the trophy to be competed for annually.

While this first contest might not bring out everything desired in small planes, it opens up a vista which in succeeding years will take shape of a lasting cause for aeronautical good.

Authority was given Mr. Sydney B. Veit, 142 Faubourg Poissonniere, Paris, France, to represent the National Aeronautic Association at the F. A. I. conference in Paris, January 5.

Mr. John J. Ide was named alternate, according to announcement made by F. P. Lahm, chairman of the N. A. A. Contest Committee. Mr. Veit was authorized to vote on any subject on the order of business during the sessions.

"Flight" on Dixmude Disaster

The terrible calamity which has overtaken the French airship "Dixmude" will awaken the most sincere sympathy all over the world. We in this country can the more readily appreciate the great loss as we have suffered a very similar bereavement in the fatal accident to the "R-38" over the Humber. There is, in fact, considerable similarity between the two catastrophes. Both airships carried more than their normal crew. Both carried a number of highly-placed officials, and both involved the loss of some of the greatest airship experts of each country. To the many messages of sympathy sent to France from this country, beginning with one from the King, we would add one on behalf of all readers of *Flight*, who feel very deeply the loss sustained, not only by France but by the aviation communities of the entire world.

As to the causes of the accident, no definite information has yet come to hand. It appears probable, however, that the ill-fated airship caught fire, either through breaking up as did the "R-38," or through being struck by lightning. It also seems that the staff work was not all that it might have been, and an inquiry is being held into the conditions under which the cruise was undertaken.

Briefly the lesson to be learned seems to be that it is unwise to send out any airship unless suitable bases are provided at points always within reach from the route followed, and that a lightly-built airship like the "Dixmude" is not suitable for prolonged journeys far from a base. The calamity cannot fail to have its effect on the proposed Burney airship scheme, and rather seems to lend strength to the plea repeatedly made in these columns for extensive research into airship problems before the construction of five-million cubic feet ships is undertaken. It seems probable that a few thousands wisely spent on research may be the means of saving millions later, to put the matter on no higher level than that, and leaving out the consideration of possible loss of valuable, nay, irreplaceable, lives.—*Flight (England)*.

Boeing Planes Look Good to "Brook"

Lieutenant W. H. Brookley, McCook Field test pilot, returned recently from a mission to the Boeing Airplane factory in Seattle where he was occupied in testing out a number of new planes being built by this firm for the U. S. Government. Lieutenant Brookley says the ships have many fine points and anyone who has seen "Brook" fly knows that he ought to know what he is talking about.

A number of closely guarded tests have been conducted at Wilbur Wright Field during the last several weeks with a type of barrage balloon. Only those who are directly connected with the experimenting are permitted to view the tests. It is said the balloon will be used as an aid in warding off aerial attacks.

N. C. R. Hundred Pointers Join N. A. A.

Five hundred and fifty members of The National Cash Register Hundred Point club, sailing the deep blue sea on their return from the Bermuda convention, recently decided to enroll in an organization which sails the deep blue air.

Without a dissenting vote, all 550 members of the club decided to form the CPC chapter of the National Aeronautic Association and handed to H. W. Karr, general manager of the association, their complete membership as an affiliated chapter.

A meeting held on board the S. S. *Orduna*, which led to the forming of the latest N. A. A. chapter, was also the occasion for a complimentary address by J. H. Barringer, vice president of the N. C. R. Co., and another by Charles Steffy, sales manager of the company, for the manner in which the men conducted themselves during the convention.

With a vociferous yell, the assembled 550 crack salesmen of the N. C. R. pledged themselves to "go out and trim last year's record," and to put over a still bigger business for the company in 1924.

The meeting on shipboard was one of unbounded enthusiasm and proved that the efforts of company officials to instill business optimism during the three-day session at Bermuda was not lost on the conventioners.

—*Dayton Daily News*.

Special Equipment To Oil World Flight Ships

Brookins Measures Sent In Advance to Landing Fields

When the four army ships take off from Santa Monica, California, sometime during March, for their round-the-world flight, every step will have been taken to assure the success of the venture.

This means that provisions must be made all along the route mapped out so that ships may be cared for thoroughly and with the least possible delay. For this is to be not merely a round-the-world flight, but a time record flight. The United States wants to hang up a record that other countries will find it very hard to beat.

As instance of the extent to which these preparations have gone is found in the fact that oil measures made by the Brookins Manufacturing Company of Dayton, Ohio, have been purchased and sent out in advance as equipment for various landing fields along the route.

The Brookins Measure is made with a flexible metal nozzle and with a thumb-controlled outlet valve. This means that a full gallon of oil may be put into a motor with the least possible delay, without tipping, without any danger of spilling.

The Brookins Measure is already used as standard equipment in thousands of filling stations and garages where the saving of time and oil have made it a valuable piece of equipment. Its selection as landing field equipment for the round-the-world flight will help to assure maximum efficiency in servicing ships wherever they touch during their trip.

(Continued from Page 19)

leaped over the side, opened his parachute, and floated slowly down to a landing eighteen miles away, making another record.

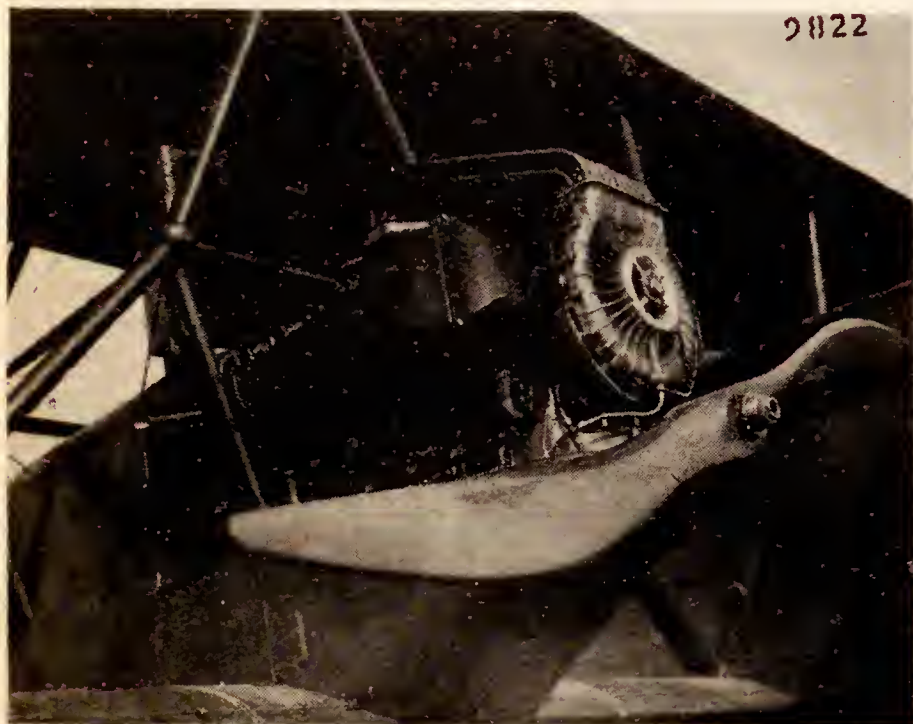
Today the supercharger has passed from a fascinating experiment into a military necessity. For it alone



A RECORD IN THE MAKING

The famous LePere P-53 ascending on altitude test.

enables airplanes to reach high altitudes, and to climb, maneuver, and fight there. It has its commercial aspects too, for in our own lifetime passenger airplanes will streak past, thirty-five thousand feet overhead.



A CLOSE-UP OF A SUPERCHARGER INSTALLED ON AIRPLANE

with passengers and pilots enclosed in a sealed cabin, comfortably heated, and maintained at sea level conditions by means of an air pump giving a steady supply of fresh air at constant pressure. Who knows but what we shall be flying in one ourselves?

More About California Climate

Yep, they still brag about their climate in Sunny California. No wonder "O Sole Mio" (My Sunshine) is a popular tune of the native sons and daughters. Our Rockwell Field correspondent states that blizzards, snow, railroads blocked by snowstorms, lines of communication down, airship blown from its mooring mast, etc., are the news items we read while sitting in the shade of the pepper trees this morning in the land of sunshine and flowers, and our hearts go out to the poor birds who have to contend with this kind of weather. Good old San Diego is still holding its own when it comes to climate. The birds are singing and the windows are open to receive the pure, fresh air from the broad Pacific.

Flivver Planes in the International Air Races

It is proposed to add a new feature to the International Air Races at Dayton next fall. Lieut. H. H. Mills, of the Fairfield, Ohio, Air Intermediate Depot, has been assigned to co-operate with *The Dayton Daily News* in regard to the flivver airplane contest which is sponsored by *The News* and which will be held at Wilbur Wright Field in connection with these races.

Supply Arrangements for World Flight Take Active Form

Our Wilbur Wright Field correspondent states that the supply activities in connection with the around-the-world flight have been carefully worked out by Property Maintenance and Cost Compilation, and it is believed that this is the first time a supply program has been devised in such great detail. Spare parts for airplanes and engines, a fairly complete outfit of tools, small quantities of standard utility parts, and material such as tubing, shock absorber cord, plywool, and items other than spare parts are being sent to each station on the route of the proposed flight. The spare parts and tools are packed in specially constructed boxes which have been designed at the Fairfield Air Intermediate Depot and built in the Repair Shops. The boxes themselves are constructed of ash, spruce, and plywood, so that they may be used for the furnishing of wood for emergency repairs if necessary. Carpenter tools for working up the wood are sent in the tool chests. Tubing and other items which cannot readily be bent are packed with the propellers in lengths of six feet or more. All of the shipments to points east of Calcutta are to be sent from Fairfield to Seattle, where they are to be loaded on shipboard, while all shipments to Karachi, India, and parts west of it are sent to New York. The weight, cubic contents, and dimensions of every article have been carefully considered and about 480 separate items are being sent to each station.



The Supercharged Martin Bomber, which twice broke the three-man altitude record, and from which Capt. Stevens made his long parachute drop.

Lighter-than-air Training for Airplane Pilots

The Training and War Plans Division, Office Chief of Air Service, is desirous of having a number of officers of the Heavier-than-Air branch of the Army Air Service detailed to take the course at the Balloon and Airship School, which will commence about September 15 next and end about June 20, 1925. Announcement is made that a limited number of applications will receive favorable consideration.

Those officers of the Heavier-than-Air branch who are desirous of pursuing the next Lighter-than Air course at the Balloon and Airship School at Scott Field, Belleville, Ill., should lose no time in filing their applications in due form.

Shenandoah Overhaul Reveals no Further Damage

The overhaul of the airship "Shenandoah," now under way at the Naval Air Station at Lakehurst, N. J., has so far revealed no material damage to the ship other than that originally noted upon the return of the ship to the shed after breaking away from the mast on January 16. The removal of the outer cover of the airship, together with the deflation of the gas cells, is now going on. The outer cover will be replaced over a considerable area of the ship, with extra heavy material over the nose and covering the fins.

It had been planned to give the "Shenandoah" a complete overhaul and this will now be done simultaneously with the work of repair. The work of overhaul, planned before the ship broke away from her mast, would have taken six weeks or more; and the work now going on will take but little longer. The net loss of time due to the breakaway will probably be only a few weeks.

Boston Naval Reserve Unit

A total of seventy-six flights were made at the Naval Reserve Air Station at Squantum, Mass., near Boston, in the JN-4 plane loaned by the Army Air Service, during the week ending January 19. The postgraduate officers under instruction at the Massachusetts Institute of Technology were among those who were able to take advantage of the plane to make training flights.

In an address before the Aeronautical Society of the Massachusetts Institute of Technology, on January 18, the Commanding Officer of the Air Station, Lieut. George R. Pond, USNRF, gave a great impetus to interest in the Navy's reserve aviation force. He stressed the opportunities for flight training offered to young college men by the Navy's reserve aviation course, and after his address some twenty-five requests for additional information were made. It is anticipated that a number of new enrollments in the Naval Aviation Reserve will be obtained.

Lt. Davison to Leave for Friedrichshafen

Lieutenant Ralph E. Davison, USN, who will pilot one of the planes of Captain Ronald Amundsen's expedition to fly across the Arctic this summer, will leave for Friedrichshafen, Germany, about the first of March. Mr. H. H. Hammer, Captain Amundsen's personal representative, now at Christiania, Norway, notified the Department recently that he would be in Washington about the fifteenth of February to discuss final plans for the participation of Lieut. Davison in the expedition. Lieut. Davison will go with him to Europe.

Rarest Air Stamp

At a recent New York stamp auction a single unusual specimen of the rare error of the 24 cent U. S. air post stamp of 1918, with the center inverted, sold for \$610. (£150).



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day of the month.

Fred F. Marshall, Lieut. O. R. C.....Editor and Business Mgr.

SHOULD WE OR SHOULDN'T WE?

Considerable comment has been aroused both pro and con over the recent shipment of Aircraft and other war munitions by the U. S. to the Obregon government of Mexico, which at the present time is confronted by one of the periodical uprisings, headed by De la Huerta, a rebel leader.

Heretofore, the U. S. Government has adhered to a "hands off" policy during Mexican internal troubles so long as she confined her pillaging and banditry to the hither side of the Rio Grande.

The action of the President in permitting the shipment of war goods to the Obregon faction is feared by some as apt to establish a bad precedent and result in future complications when similar aid might be solicited by some one of our other near neighbors. It is recalled too, that we seriously objected to the action of England in supplying war munitions to the Confederate forces during the Civil War.

It is contended on the other hand that the Obregon government has been found the most staple administration that Mexico has possessed for many years and that its policies are the will of the majority of the people. The United States therefore hopes in supplying the Obregon government with munitions to assert its recognition of this government, and materially assist it in putting down the present uprising and possibly thereby help it establish itself in power, and waylay any future attempts to overthrow it on the part of rebel leaders.

Returning to the other side of the question there are those who contend that there is still the danger of the United States becoming embroiled in some future trouble with Mexico and such a thing as supplying our standard aircraft, secret war plans, and thousands of very late type automatic pistols, which we do not have even in sufficient quantity to supply our own reserve and militia forces, might result in our army having to use for some time obsolete weapons against the supply of modern war material sold to the enemy.

AERONAUTICAL DIGEST EDITOR RESIGNS

Major Charles J. Glidden, Founder and Editor of Aeronautical Digest, will retire from the Editorial staff after the March issue, to devote his time exclusively to Commercial Aviation.

THE WINSLOW BILL

We sometimes wonder if persons interested in aviation and those directly connected with the industry have fully considered the importance of the Winslow Bill. If the actual facts were known it is doubted if one in ten knows what the bill really is, and it is therefore quite apparent, why this bill has not become a law long before this.

The 3243 Winslow Bill introduced by Hon. Samuel E. Winslow of Massachusetts has as its general purpose, the control of all flying in this country. A similar bill sponsored by Senator James W. Wadsworth of New York was passed by the Senate in 1922 and provides for the creation of a Bureau of Civil Aeronautics in the Department of Commerce. However, the proposed air laws incorporated in the Wadsworth measure did not effect sufficient relationship with the existing laws affecting transportation, customs, immigration, etc.

The Winslow Bill is prepared upon a more elaborate basis. This bill was introduced January 8, 1923, and was referred to the House Committee on Interstate and Foreign Commerce. It did not get out of the hands of the committee during the sixty-seventh Congress due to congested condition of affairs then confronting the House. When the sixty-eighth Congress convened Mr. Winslow reintroduced his bill, while at the same time Senator Wadsworth reintroduced his. The senate, more familiar with the latter bill, repassed it January 8, 1924, and upon being sent to the House was referred to the Winslow committee. On Wednesday, January 16, 1924, Mr. Winslow called together his aviation sub-committee to consider the Winslow Bill. The measure provided for a Bureau of Civil Aeronautics in the Department of Commerce to be administered by a Commissioner of Aeronautics. It proposes to regulate as an element of interstate commerce the operation of every civilian flying machine in the United States and possessions, all civilian flying and all air navigation facilities. The act carries amendments to the navigation laws, to the Tariff, Public Health, Immigration, and Narcotic-Drug Acts, the Criminal Code, etc.

No flying machine may be operated until it has been registered and certified by the Bureau as being airworthy. Provisions are made for admitting aircraft under foreign registry. All aircraft shall be marked so as to make identification easy. All civilian air navigation facilities, airdromes, routes, etc., must have a certificate as to their suitability for the purpose intended.

No persons who have not qualified by examination will be certified to pilot aircraft. Only those possessing such a certificate from the Bureau will be permitted to operate or pilot aircraft. A log book or detailed account of all operations must be kept.

Fines and penalties are provided for violations. The secretary of Commerce is authorized to designate and approve all public and commercial air routes, and to maintain them adequately whether they are owned by the Federal Government, State, or municipality. Maps shall be made available along with periodic reports giving in detail all information relating to civil aviation.

Government airdromes, such as those operated by the Army, Navy, and Air Mail Service, are authorized to sell to civilian aircraft alighting there, such equipment and supplies as may be necessary to aid them in continuing on their way to the nearest private or public field.

The President is authorized to prescribe reserve air spaces for public safety or national defense; and over these spaces civil aircraft may not fly without special authority. The measure literally makes all civil aircraft subject to regulations when engaged in interstate and foreign commerce. The Bureau of Civil Aeronautics will have full administrative

powers and may invoke the aid of the courts in carrying out investigations, penalties, etc.

The need of adequate air regulations can be appreciated even by the layman and the fact that the United States has not yet enacted such laws is just another backward phase of our generally lagging aviation policy. No less than forty nations of the world have some form or other of air laws, while the U. S. has practically none.

The Winslow Bill should become law without delay and in order to hasten such action it behooves every friend of aviation to bring influence to bear upon his Government representative to help push the measure through. If the public doesn't show sufficient interest in such things, it is only natural that it will be regarded as superfluous in Washington.

SLIPSTREAM has been deriving a considerable amount of free publicity lately at the hands of our contemporary, Mr. Gardner, of the Gardner Moffat Co., Inc., who among other things publishes the "Aviation" weekly. In the January, 1924, issue of "Aviation" a full-page discussion was devoted to "Slipstream."

The editor of "Slipstream" deems it a breach of dignity for one in the position so prominently assumed by Mr. Gardner in aviation circles to instigate such methods through the medium of his pages.

The "Aviation" magazine, if it has the right motive back of it, certainly cannot afford to devote its valuable space in such liberal manner to distorting the conscientious efforts of "Slipstream." Mr. Gardner shows a glaring lack of knowledge of psychology when he contemplates undermining the popularity and generally good attitude toward "Slipstream" by instituting a program of adverse comment in his magazine. We have already reaped the benefits of the favorable reaction by numerous letters of inquiry asking more particulars about our publication.

The editor of "Slipstream" has recently acquired the entire publication rights of the magazine and has resigned his position with the Engineering Division, Air Service, McCook Field, to relieve any ground for complaint whatsoever that "Slipstream" has an "unfair advantage" and was using unfair methods of competition.

It is to be regretted that Mr. Gardner cannot bring himself to a better spirit of co-ordination in this great cause for which we are working in common. It is folly to think that any publisher of an aviation magazine could derive great financial benefits at this time. The primary object now must be to extend every possible bit of space to the struggling aircraft industry, while the editor's mind should be turned to the more worthy purpose of influencing Governmental support, rather than to worthless quarreling.

Fred F. Marshall,
Lieutenant O. R. C.
Editor.

Pigeons Render Distinguished Service in Japanese Earthquake

A recent issue of the *Miyako* states that, among agents rendering great services worthy of special mention in a history of the great earthquake, we must not leave out the pigeons which showed astonishing activities. At the time when means of communication were interrupted simultaneously with the outbreak of the earthquake, the military pigeons at Nakano were organized temporarily into an Army to make good the deficiency, under Lieut.-Col. Yamamoto. Since the first, rapid and certain communication was carried on in a manner by no means

inferior to that in which human or mechanical power operates between Headquarters of the Security Force and the detached palace at Nikko at the head of the list and the units and government offices far at Osaka, Kagamigahara, Shimizuminato, the Fuji drill ground, Sendai and Utsunomiya, and near at Urawa, Chiba, Odawara, Yokosuka, Yokohama, Kamakura, Fujisawa, Tachikawa and Tokorozawa.

The Airplane in the Japanese Disaster

An issue of the Japanese publication *Miyako* during the time of the great Japanese earthquake dwells on the meritorious flights made by airplane after the outbreak of the earthquake which tend to bring out the extreme usefulness of this invention. Flights were made to Tomosawa in Nikko to pay respects to the Emperor there. Up to the night of the first, the conditions in Tokyo and Yokohama were utterly unknown in Osaka, the only piece of information being a wireless telegram saying that fires occurred subsequently to the earthquake. At this very time, by order of the Minister of War, the B216, piloted by Lieut. Hadano, with 1st Class Private Nakamura as a passenger, started on the 2d at 9 a. m. without weather observation, the pilot and his mate being determined to run the risk of life. Arriving at Osaka at 3 p. m., it discharged the important errand to the Fourth Division. On this account, the condition on the Tokyo front with regard to the earthquake was made known to the western part of the country, and telegrams were sent from Osaka to various parts of the world. The body of the plane became discolored black with smoke. The trip there and back took nine and one-half hours. On the 2d, between 6 p. m. and 6:30 p. m., the Minister of War gave orders for three airplane flights—one to the 15th Infantry Regiment at Takasaki, the second to the Utsunomiya division, and the last to the 57th Infantry regiment at Sakura. They all reached their destination in the dark and discharged their missions. It was solely due to these "do or die" flights that the troops were able to assemble in and about Tokyo so quickly. Besides, there are numerous cases where airplanes did conspicuous services. Some of these instances are the reconnaissance and propaganda flights made on the plane comprising Tokyo, Yokohama, and Sagami, the flights connecting Osaka and Tokyo, and the reconnaissance made of the seven islands of Izu.

At the time of the conflagration, the plane while flying over Tokyo was thrown up by the rising currents of air caused by the flames, and the down helm did not respond to the control, so that flying was very dangerous—a fact probably not experienced even during the European war. As the tasks required haste, sometimes a speed of over 200 meters per hour was employed, but no accidents followed. The times of flight up to the 9th numbered 201 as regards only the flight school, and the 2d, 4th, and 5th Flight Battalions; hours of flight, 253. The total distance flown was 43,000 kilometers at a supposed

speed of 170 kilometers per hour; nearly equal to the circumference of the earth along the equator, so that it comes to the same thing that the world was circled once. The distance will become still greater by far if the activities shown by the Shimoshizu branch of the flight school in the Chiba districts and the 1st and 3d Flight Battalions in the Osaka region are included.

France Field Pilots Fly to Costa Rica

The following is a translation of an article which appeared in *Diario de Costa Rica* on December 28, 1923, touching on the flight of three Army airplanes from Panama to Costa Rica:

"In accordance with recent announcements, three North American aviators arrived at 12:30 yesterday, who, due to the efforts of the American Minister in this city, Mr. Roy T. Davis, have come to make several flights during the holidays, and at the same time are going to make a visit of courtesy to the government of Costa Rica.

"From 10:30 on the mass of people bound toward the landing field was extraordinary; they went in automobiles, coaches, and for the most part on foot; many went on the tramway; the people filed through the Paseo Colon, giving the impression of a river about to overflow.

"A few minutes after eleven o'clock the landing field offered a gala appearance. A crowd of more than five thousand people had gathered there, the field being marked off by white flags. To the left of the field and a little to the back was the reviewing stand, draped with the colors of the United States and Costa Rica. About 12 o'clock the President of the Republic, Mr. Julio Acosta, arrived, accompanied by his aide. There were already assembled there the Secretary of State and the Minister of Public Affairs, Messrs. Aquiles Costa and Miguel Obregon. Making preparations to receive the aviators and waiting for them were Cols. Jose Maria Pinaud and Francisco Bonilla, members of the Aviation Committee. At 11:00 p. m. his excellency, Mr. Roy T. Davis, United States Minister, arrived, accompanied by the Secretary of the Legation.

"A little before 12:30 there appeared on the western horizon the three planes which advanced in the form of a triangle. The crowd then went wild; voices everywhere, applause and much confusion, so that it was impossible for the police to detain the people and keep them in their proper places, as every one wanted to get a better view of the planes, without thinking for a moment of the danger he would likely encounter in going out on the field.

"The three aviators circled the field, flying toward the east in the general direction of the city, and after making a few turns they landed, one by one, amidst the cheers and applause of the crowd. In the name of the government and on behalf of the reception committee, Col. Bonilla received the aviators. Then they

were greeted by Mr. Davis, the President of the Republic and the Minister of Public Affairs. The aviators were conducted to the Hotel Europa, where they were taken care of by the Entertainment Committee."

A Hunter's Paradise

Judging from the remarks of the Kelly Field Correspondent to the *Air Service News Letter* relative to the prevalence of game in Texas, it would seem that a certain part of the Lone Star State is a veritable Hunter's Paradise. He says that while it is not his purpose to brag about the hunting ability of the members of Kelly Field, it is confidently believed that more game has been bagged and better hunting obtained than any other field in America. More deer (type four-legged, white tail, grass and leaf fed, with one or more points) have been killed than ever before in the history of this widely known field. Nearly all who hunted secured the limit and at least every one who took the trouble to stalk the animals secured at least one of them. The biggest buck for points this season was killed by Lt. McK. Robinson and weighed around 240 pounds, having ten points. Sergeant Fiertag was next with an eight-pointer weighing 180 pounds.

The opening of the hunting season found a small camp "all set" constructed amidst the wilds of Pearsall, Texas. The camp was of a temporary nature, but comfortable and assembled. It was constructed by members of the Attack Group and furnished a starting point on all of the deer hunts in that part of the State. The Group was hospitable in point of invitations and the camp was voted a huge success by all who availed themselves of it. It is estimated that twenty-five bucks were killed within a radius of fifteen miles of the camp.

Touching on the winged tribe of game, our Correspondent states that duck shooting has also been very much above normal and that numerous parties have been organized and conducted to a successful conclusion. Majors Hickman and FitzGerald and Captains Giffin and Bubb spent several days on the coast near Bay City and returned with plenty of game. Approximately one hundred mallard ducks and ten Canadian "Honkers" were the results of the trip. Lieuts. Maughan, Williamson, and FitzGerald left the post at 5:00 a. m. and returning at 10:30 a. m., the same morning, had secured the daily allowance of twenty-five birds each. All were either canvas backs or mallards. Few teal have been killed this year, although numerous bunches have been reported. Turkey hunting was good for those fortunate enough to secure invitations to hunt same, but due to the fact that practically all of the turkey country is posted, very few hunts were staged. The limit was secured by Lieut. Dick Allsworth in the early part of the season, and it is believed he was the only one to thus distinguish himself. "Dick" has also brought in plenty of ducks and several deer.

Blazing the Trail for Around-the-World Flyers

FACING a task involving many obstacles, Lieut. Clayton Bissell, one of the few officers now in the Army Air Service bearing the unofficial title of "Ace," who has been selected as Advance Officer for the First Division of the proposed flight of four Army airplanes around the world, left Seattle, Wash., February 2 to smooth the path for the aerial circumnavigators of the globe along that portion of the route between the base and Attu Island in the Aleutian Group.

From Seattle his journey to Chicago on the Island of Attu will involve a distance of approximately 3,000 miles. He is scheduled to make stops en route at Prince Rupert, British Columbia; Cordova, Seward, Chignik, and Akutan, Alaska; and Nazan on the Island of Atka.

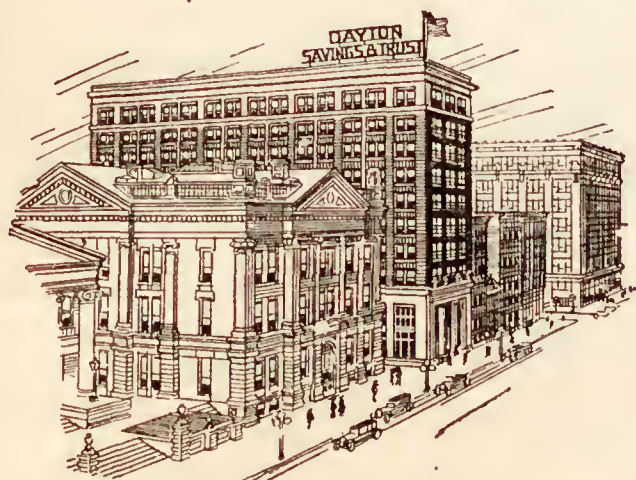
Lieut. Bissell has a big job on his hands. On the route he will traverse at this season of the year there is no scheduled transportation, everything being ice-bound and, like Phineus Fogg, the hero of Jules Verne's "Tour of the World in Eighty Days," he will have to use all the ingenuity at his command to successfully carry out his mission. The principal part of his job will be to make arrangements at the different points where the planes are expected to land for the care and comfort of the flyers, seek out the most suitable landing places for the planes and train men at these various points to care for the ships when they arrive. It must be remembered that at the stopping points up north the natives speak only Eskimo and a smattering of Russian, so the difficulty of Lieut. Bissell's task can well be realized. He will have to so train them that they will be able on their own initiative to go about their job in a thorough fashion when the time comes for the arrival of the planes for, being forced to go right ahead to make arrangements for the landing of the flyers all along the first leg of the globe flight, he

will not be on hand at any point to personally direct these men.

At each of these stopping points Lieut. Bissell will make photographs and sketches of landing fields where bases will be on land, and of harbors and clear stretches of water chosen for landing or take-off where planes will operate from the water. The harbor charts will be marked to show the best area for landing and take-off, taking into consideration the various prevailing wind directions, and also the exact location to which ships must be taxied after landing. These charts will also be marked to show obstructions in the water liable to prove disastrous to landing or take-off, such as shoals, shallow water, strips uncovered at low tide, wreckage, massed shipping, etc. He will also make special note of obstacles surrounding the landing area, such as high hills immediately adjacent to harbors, long wharves, bridges, overhead wires or cables, radio towers, ships, derricks, etc. At each landing place on water four 500-pound anchors will be put down in sheltered water and connected with a heavy cable to a floating buoy. Barrels or steel drums will be used as buoys and will be painted yellow.

As a precautionary measure to insure the safe landing of the around-the-world flyers in various harbors it will be necessary to make arrangements for all shipping, especially small boats, to be so grouped as to leave as great a landing space as can possibly be procured. An emergency raft will be provided at each stop consisting of four barrels or steel drums, fastened together with strong frame work, to be used as a float in case a pontoon is destroyed in landing, to prevent the sinking of the plane, this raft to be constantly ready to be towed to any plane if necessary immediately on landing.

At each stopping point the Advance Officer will designate a local representative to take charge of all the



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arrangements incident to the landing of the flyers and providing for the accommodation and various needs of the pilots.

To keep the Commanding Officer of the flight thoroughly posted as to various conditions at the different points where stops will be made, he will compile a detailed report on each and leave it for the flight commander at the previous stop.

the people of Alaska, and the Biological Survey with a letter to Mr. Donald Stevenson, Game Warden of the Aleutian Islands, from whom much valuable information on these islands is expected to be procured.

In order that facilities may not be lacking for making repairs to any of the planes at the various stopping points, it will be necessary for the Advance Officer to



Army Air Service Officials mapping out the route of the around-the-world flight to be attempted by Army aviators this spring in four specially equipped "Douglas World Cruisers."

Left to right in the above photo are: Lieut. Leigh Wade, Captain Streett, Major Frank and General Mason M. Patrick, Chief of the Army Air Service.

The Aeronautical Chamber of Commerce, New York City, has communicated with influential people throughout Alaska, advising them of the general plans of the around-the-world flight and requesting their co-operation and assistance. Both the Secretary of War and the Hon. Scott C. Bone, Governor of Alaska, furnished Lieut. Bissell with letters of introduction to

obtain detailed information on the availability of boats for use in ferrying, towing, and refueling; shipyards equipped with cranes or hoists capable of lifting engine or even the entire plane; the names of concerns or individuals capable of doing such type of work as welding, general machine work, pressed steel fittings, repair of

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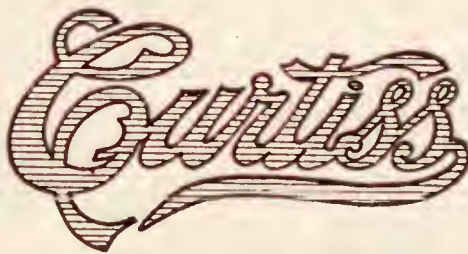
The winning 1923 Navy Curtiss Pulitzer and Schneider Cup entries were equipped with these propellers.

Revolutions per minute of upwards of 3,000 were repeatedly attained while establishing the new world's speed record of 266 miles per hour.

Propellers which have been in continuous cross-country service for over two years are as good today as when installed.

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Southwestern Station, Love Field, Dallas, Texas—"Training throughout the Year."

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(Continued from Page 8)

it was they who really ran the graver risks, for while we were safe in the air, many officers were madly chasing us in their high powered automobiles at sixty to seventy m. p. h. over the New Jersey roads on a wet and stormy night.

AN engineer managed to cook some chops on the exhaust pipe of the forward engine, and brought them into the control car. Pilot Heinen declined one, saying he was going to have a good breakfast at home at six o'clock in the morning. I accepted a chop because I had been on the ship since noon, twelve hours before, whereas the others had come aboard at 4 p. m. or after. It was the best chop I ever ate.

As soon as steerage-way had been attained after breaking away from the mast, the ship was headed south against the gale, but for several hours our progress was to the northward, stern first over the ground. I do not know what towns we passed over; but soon we were in that populous part of New Jersey west and southwest of New York City where the earth was densely populated and a blaze of light for many miles in every direction. The gale gradually abated and hauled to the westward. Steering the ship with less than half the normal control surface was difficult, and many authorities would previously have said impossible, but nevertheless it was done, with only a few wild yaws from the desired course.

Over Jersey City and South Amboy the ship was able to hold her own against the west wind, and by taking the wind a little on the starboard bow she crabbed sideways slowly to the south. From below we appeared to be hovering motionless, and the immense size of the SHENANDOAH is so deceptive that although we were actually about 2000 feet up, most observers thought we were just over the housetops, and many telephone messages were sent to Lakehurst that we appeared to be trying to effect a landing.

At 3 a. m. we were over Lakehurst once more, and the wind was dropping fast, and had hauled to the northwest so that it was parallel to the hangar, the most favorable direction for taking the ship in. We saw

and heard the steam whistle at the Air Station summoning the ground crew to receive the ship; and half an hour later a perfect landing was effected, and the battered SHENANDOAH was quickly run into the great hangar, where we stepped down from the ship and were received with such acclaim as may be imagined.

IT is safe to say that no other airship has come triumphantly through such a predicament as the SHENANDOAH was in at the moment she was torn from the mast. Her case may be compared to a steamship going to sea in a seventy-five mile gale with her bow torn open, two forward compartments flooded, and more than half the rudder gone. Who shall say in the face of this experience that the airship is unsafe and unreliable, incapable of surviving storms, and rendered unmanageable by minor accidents? An airship of American construction, manned by an American Naval crew with an experienced Zeppelin pilot had won out under unprecedentedly adverse conditions.

Lincoln Limousine for Johnson Co.

A five passenger Lincoln-Standard Aerial Limousine arrived in Dayton, Ohio, the fore part of February which will be added to the fleet of passenger and commercial planes of the Johnson Airplane & Supply Company, which firm operates a flying park in this city. The airplane was flown through by Walter Lees, chief pilot for the Johnson firm, from Lincoln, Nebraska, where the Lincoln Airplane Company is located.

This new passenger plane is of quite novel and unique design, having a special compartment for its passengers who can seat themselves comfortably, two in each seat facing each other.

Fokker says there will be a plane for every one thousand people in America, which seems at least to be good advertising for us.
—Dayton Daily News.

Editor, Slipstream

Belleville, Ill.

My Dear Sir:—I am enclosing herewith my check covering subscription to "Slipstream."

I want to congratulate you on every copy of your publication. I always receive my own with great pleasure. I wish you every success.

Very truly yours,

A. LEO STEVENS, Aeronaut.

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gasoline tanks, cabinet work; facilities for pontoon and wing repair, etc.

With regard to the fuel supply, gas and oil for all the stops will be furnished by contract with one of the large oil companies which can make shipments to all points in the first division except Nazan and Chicagoff, for which points they will ship the supplies at Dutch Harbor, from which point the Advance Officer will have to transship same along the Aleutian Islands at the same time with other supplies.

It is the aim of the Army Air Service to have the flight pass through the First Division as expeditiously as possible during the month of April or the early part of May, in order that the flight may proceed through China and India prior to the typhoon and rainy seasons, respectively, which start in the latter part of June or early July. Furthermore, it is necessary that they might arrive in England early in August in order to assure successful passage over the Atlantic Ocean. All plans are based on a four and a half month schedule for the whole flight.

Officers of the Army Air Service who have been chosen as Advance Officers for the other divisions of the route are as follows:

Second Division, from the Island of Shimushu in the

Kurile Islands of Japan to Chemulpo, Chosen—Lieut. Clifford C. Nutt.

Third Division, from Tsingtau, China, to Calcutta, India—1st Lieut. Malcolm S. Lawton.

Fourth Division, from Calcutta, India, to St. Stefano, Turkey—Lieut. Harry A. Halverson.

Fifth Division, from St. Stefano, Turkey, to London, England—Major Carlyle H. Wash.

Sixth Division, balance of the route—Lieut. Clarence E. Crumrine.

All of the above-named officers have been issued instructions similar to those issued to Lieut. Bissell.

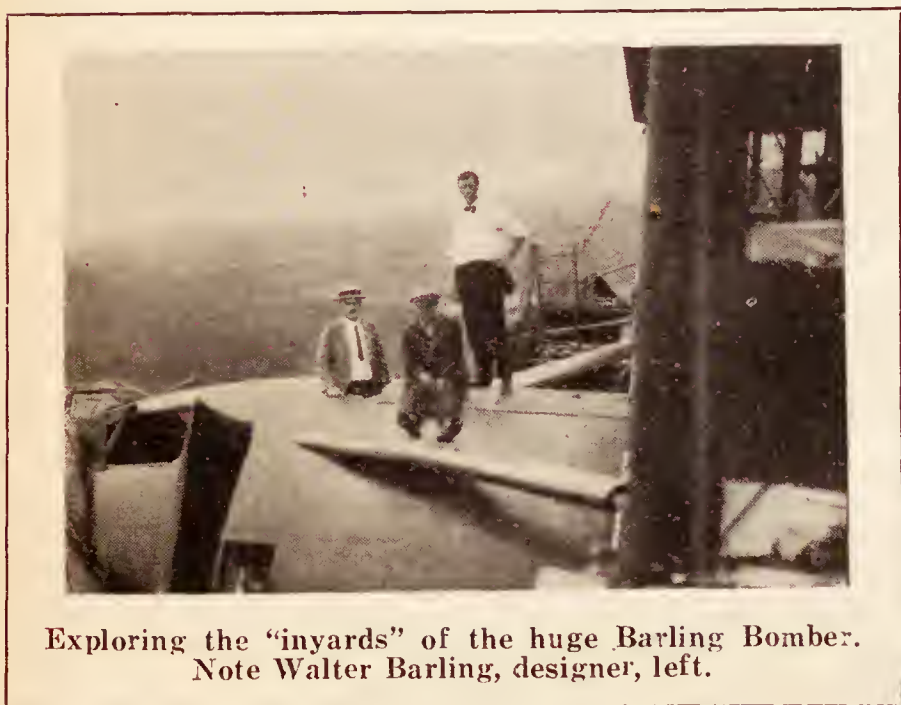
Announcement of the names of the officers selected to pilot the four Douglas World Cruisers around the world was recently made by the Chief of Air Service. They are Major Frederick L. Martin, flight commander; Lieutenants Lowell H. Smith, Erik H. Nelson, Jack Harding, and Leigh Wade, with Lieuts. Leslie P. Arnold and L. D. Schulze as alternates.

These officers have been given a thorough course of training at Langley Field, Va., in preparation for the coming flight. Courses in navigation and meteorology as applies to the route were given by instructors qualified to do this work, supplemented by actual

(Continued on Page 34)

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Barling Bomber Undergoes Repairs



Exploring the "inyards" of the huge Barling Bomber. Note Walter Barling, designer, left.

The mighty Barling Bomber, largest airplane in the world, is at the present time virtually torn to pieces by a crew of recently employed mechanics who are rebuilding the big ship at its home station, Wilbur Wright Field, Dayton, Ohio.

Owing to the massiveness of the gigantic air monster it has been minus adequate shelter, no hangar in the country, except of course the domicile of the "Shenandoah" at Lakehurst, being large enough to accomodate its huge bulk. It was even necessary to carry on the original assembly work on the big

ship in the open, except for rudely improvised shelter built of canvass. Consequently the weather has played havoc with the fabric and in fact a greater part of the structural work on the ship. A special hangar to house this mighty plane is now nearing completion at Wilbur Wright Field, and as soon as the repairs are made the great bomber will be provided with a much needed roof over its head, thanks to the "powers that be," who at last awakened to the necessity of such.



An interesting comparison—a six-foot man standing by fore landing-gear wheels of Barling Bomber. These wheels were built by the Dayton Wire Wheel Company, Dayton, Ohio.

(Continued from Page 33)

flying of the Douglas airplane with pontoons for water flying, and equipped with the latest Air Service navigation instruments.

Detailed plans for the flight are being worked out by a committee working under the direction of the Chief of the Training and War Plans Division, Office of the Chief of Air Service. This committee will continue to function as long as needed and will make all its information and plans available to the flight personnel, including the advance officers. The committee consists of the following officers, who are responsible for the duties listed after their names:

- Capt. Wm. F. Vollandt—Transportation and Finance.
- 1st Lieut. St. Clair Streett—Route, maps, general organization, and information.
- 1st Lieut. Robert J. Brown, Jr.—Chairman, organization and co-ordination.
- 1st Lieut. Erik H. Nelson—Equipment and engineering.
- 1st Lieut. Clarence E. Crumrine and Lieut. Clayton Bissell—Equipment, engineering and route, advance officer.
- 1st Lieut. Elmer E. Adler—Supply.

The purposes of the proposed flight are to gain for the Air Service added experience in long distance flying and particularly in the supply problems connected therewith; to complete an airplane flight around the world in the shortest practicable time; to demonstrate the feasibility of establishing an airway around the world; and incidentally to secure for the United States, the birthplace of aviation, the honor of being the first country to encircle the world entirely by air. Much valuable information on the difficulties of operating aircraft in various climates will also be obtained.

N. A. A. ANNOUNCES 1924 BALLOON RACE

SLIPSTREAM,
Dayton, Ohio.
Gentlemen:—

Pursuant to our letter of January 12, the definite date for the 1924 National Elimination Balloon Race has been set for April 23, 1924, and will be held at San Antonio, Texas.

The winners of 1st, 2d, and 3d place in this contest form the team of three contestants which will represent this country in the International Gordon-Bennett Balloon Race which will be held at Brussels, Belgium, June 15, 1924.

Very truly yours,

By B. Russell Shaw,
Executive Vice-Chairman Contest Committee

Rain and Then Some

(By the Camp Nichols, Philippine Islands, Correspondent to Air Service News Letter)

Like a thunderbolt from a clear sky it came. What came? Why, a typhoon! Not as serious as it might possibly have been, it's true, but it shattered our hopes of getting in any more "flying time" for the week and, what's more, our hopes of seeing our baseball team win another game or two during the week-end. Water almost isolated Camp Nichols from the rest of the world for a time and wind played havoc with the telephone and telegraph service, to say nothing of the damage done to the lighting system of the post which wasn't working for several hours Tuesday night. The more cheerful ones persist in believing that every cloud has a silver lining, and in quoting that portion of the Scripture which reads something to the effect that the world shall never again be destroyed by a flood. They may be right—we hope they are—but in the meantime we'll wait, which all existing conditions enable us to do and we shall doubtless see what we shall see, of rain. There's some doubt in the minds of our new arrivals in the Philippine Islands as to the veracity of the Noah's Ark story, as we only had twenty-eight inches of rain during the past week, and our flying field could more readily be classed as a seaport or seaplane anchorage.

Flying Time by Reserve Officers

The following table indicates flying time by Reserve officers for the month of November, 1923, at Air Service Fields:

Fields	Hours	Minutes
Chanute Field, Ill.....	6	20
Crissy Field, Calif.	82	30
Kelly Field, Texas.....	13	55
Langley Field, Va.....	5	10
Mitchel Field, N. Y.....	40	5
Phillips Field, Aberdeen, Md.....	20	10
Rockwell Field, Calif.....	22	0
Selfridge Field, Mich.....	35	35
Airdomes		
Boston Airport	35	5
Bowman Field, Ky. (Louisville).....	22	56
Norton Field, Columbus, Ohio.....	29	55
Richards Field, Kansas City, Mo.....	57	40
Salt Lake City Airdome, Utah.....	23	35
Schoen Field, Ft. Benjamin Harrison, Ind.....	85	30
Total	480	26

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Free Balloon Flies Back Home

There is a fascination in the contemplation of a free balloon flight. A gipsy of the air, the balloon starts out, journeying where the winds carry it, without the responsibility of time to be met or goal to be made. It lands when and where it pleases and there, metaphorically, makes camp, its journey ended. To get it anywhere in particular, especially back to its starting place, is so far from the spirit of the thing, not to mention so near the impossible, that the flight recently made under the direction of the Lighter-than-Air Section, McCook Field, is branded as unique indeed.

On this flight, a 35,000 cubic foot spherical balloon weighed off from Wilbur Wright Field at 9:15 a. m., landing not twenty-five feet from its starting place, four hours and thirty-five minutes later. The wind-aloft data furnished before the flight indicated a ten-mile ground wind from the N.E., the direction of the wind changing clockwise with altitude from E.N.E. at 1,000 feet; E. at 1,500 feet; S. at 2,000 feet; S.W. at 2,500 feet; W. at 3,500 feet; to W.S.W. at 7,000 feet, and aloft, the intensity increasing gradually upwards to thirty-five miles at 7,000 feet.

Captain Wm. B. Mayer, Lieuts. Ira A. Koenig and R. E. Robillard, and Sergeant W. J. Bennett formed the crew.

Airplane Succeeds in Boll Weevil Campaign

The "Official Record," published by the U. S. Department of Agriculture, states in a recent issue that the dusting of cotton from the air has given profitable returns in recent tests. Incidentally, a statement is noted in another issue of this publication to the effect that the cotton boll weevil is responsible for the greatest economic disturbance in this country in recent years; that all but 4.01 percent of the cotton crop now produced in this country is in territory infested with the boll weevil; that tests conducted on more than 1,000 farms scattered throughout the Cotton Belt have shown that by proper dusting of the fields with calcium arsenate 96 percent of the farmers were able to control the weevil so as to make the crop profitable.

When it is considered that cotton can be dusted very much more effectively and economically by airplane than by any other means, the value of the airplane as an economic factor in the cotton production of this country can be readily appreciated.

Destroying Locusts is Good, but Grasshoppers!

The *Air Service News Letter* says that effective work has been done in Mindoro, Philippines, by the Locust Patrol from Camp Nichols, Rizal, P. I. The correspondent states that word reaches him to the effect that the native population in that section of the country is complaining because the grasshoppers have all been annihilated, and as a result their food supply has been cut. Oh, yes indeed, 'tis said by those who know who have partaken of it, that the grasshopper is a very delicious morsel. We know not personally and we doubt very much that you will ever be able to prove it by us.

Remarkable Performance of Fokker Planes in Russia

An interesting story told by Mr. Fokker since his arrival in this country, is of the Moscow-Koenigsberg air route.

Complaints had been sent to the Fokker plants in Amsterdam that the Fokker F-III planes with Rolls-Royce engines used on this route were taking off too slowly. The explanation came a few days later in a telegram which stated that the pilots on this service had been arrested by the Soviet government on a charge of smuggling.

These planes are licensed to carry a load of 1650 lbs. Besides this full load, the pilots had been indulging in some "commerce" on their own account by stowing away an average of some 650 lbs. of contraband goods in various parts of the ship on each trip.

A Comparison of K. L. M. (Dutch Air Line) Traffic Figures

Year	Passengers	Freight
1920	345	48,319 lbs.
1923 (9 months)	3537	289,685 lbs.

These figures require no comment on our part. They "speak" to both expert and layman alike.

A Fast Trip in Russia

Pilot Petersen flew a standard Fokker F-III, six-passenger monoplane powered with a Rolls-Royce engine, from Koenigsberg to Moscow non-stop in five hours and thirty minutes with full load. This gives an average speed of 170 miles an hour for the distance of over 750 miles or about the same distance as New York to Chicago.

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Scouting Plane Squadron Three For Arctic Expedition

It has been definitely decided to use three CS-2 and three SDW-1 planes from Scouting Squadron Three for the Navy Arctic Air Expedition. This squadron, now at the Naval Air Station at Anacosta, D. C., is commanded by Lieut. Commander C. P. Mason. The planes that will be used are of the long distance scouting type and are convertible for use either as seaplanes or land-planes. Three planes will be assigned to the USS *Ramapo* and three to the USS *Patoka*, which ships will have mooring masts and will act as tenders for the USS *Shenandoah*. The *Patoka*, to be fitted out at the Navy Yard, Norfolk, Va., will base at Spitzbergen during the expedition and the *Ramapo*, to be fitted out at the Navy Yard, Mare Island, Calif., will base at Nome, Alaska. The plans for the changes to be made in these vessels, including the addition of mooring masts for the airship, are nearing completion, and the actual work on them will be started in the very near future, if Congress approves of the great flight.

Colonel Millis of the Army Commends Work of Navy Flyers in Obtaining Data on Eclipse of September 10

The reports of the Navy pilots who observed the total eclipse of the sun at San Diego, Calif., on September 10, from planes, were compiled into a report by the Naval Observatory. A copy of this report was sent to Colonel John Millis, U. S. Army, retired, who wrote to the Naval Observatory as follows: "The reports of the several naval aviators are all of absorbing interest, and especially so are the observations and remarks of Lieutenant B. H. Wyatt, U. S. Navy, which seem to me to be deserving of special consideration."

Service Planes to Have Metal Propellers

One of the most valuable lessons learned from the Navy's participation in the Pulitzer Trophy and Schneider Cup races is to be applied to service planes. The planes that won these races for the Navy were fitted with metal propellers, that added, according to estimates, about ten miles an hour to their speed. The Navy is now purchasing metal propellers for use with service types of planes, and these propellers will be tried out at the various Naval Air Stations. It is expected that the results of the service tests of these propellers will result in all service planes being equipped with them as soon as the supply of wooden propellers now in use is exhausted.

A Mexican Air Line

A contract providing for a commercial air service (between Vera Cruz and Progreso) has been signed by the Mexican Minister of War with the Aerial Navigation Co. of Mexico. This company, which is allied with the Colombian German Air Transport Co. (Scadta), will use Junkers machines and German pilots.

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Fokker Camera Sets New Speed Record for Commercial Ships

On January 4 a Fokker type C-II camera plane owned by the Fairchild Aerial Camera Corporation of New York, caught in a 90-mile gale on its tail, covered the seventy miles from Belvedere, Pa. near the Delaware Water Gap to a point over Manhattan, in twenty-three minutes, at an average speed of 182 miles an hour. Two men were aboard, Pilot E. P. Lott and Photographer Lewis MeSpadden.

First Statistics on Vienna-Budapest Air Route

One of the more recently organized commercial air routes is that now exploited by the Magyar Legiforgalmi Reszventytarsasag, which being interpreted, is the Hungarian Air Travel Co., Ltd., of Budapest, who since the beginning of this year have run a highly satisfactory daily service between Budapest and Vienna, connecting with Orient Expresses. The Company use exclusively the Fokker F-III limousines for five passengers and pilot, and their statistics covering their first season's work are at once interesting and remarkable.

Notwithstanding the fact that two other companies have been running daily over the same route (and one of these is being heavily subsidized by its government), they carried, up to October 20 no less than 1630 paying passengers. The average time for the distance between Vienna and Budapest was 1 hour, 30 minutes, 20 seconds, while from Budapest to Vienna was flown at an average of 2 hours, 9 minutes, 6 seconds (prevailing N. W. winds). The total distance flown on regular journeys amounts to 36,200 miles.

The following extract from the letter from the Hungarian Company which accompanies the statistics is worthy of mention:

"We have experienced during the course of the season's operation neither delays nor damage, thanks to your excellent machines, and their scientific and reliable workmanship . . . not only has no accident marred the season, but not even so much as a wheel has been broken. . . We can look back on a service regularity of 100 percent."

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A FEW TESTIMONIALS FOR SLIPSTREAM

War Department
Office of the Chief of Air Service,
Washington, D. C.
Gentlemen:

The Chief of Air Service directs you be advised that this office has under consideration the placing of 41 subscriptions to "Slipstream" as published by you, to date from January 1 to December 31, 1924.

Very Respectfully,
J. D. REARDAN,
Chief, Procurement Section.

H. A. Bruno & Associates,
210 West 44th Street,
New York City.

Dear Mr. Marshall:

Congratulations on your December issue, and at the same time, thanks for the stories you carried on the Sky-writing Corporation, The Netherlands Aircraft Co., and Fairchild people.

Send us a rate card in order that we may have full information concerning "Slipstream" should any of our Aviation clients consider increasing their advertising appropriation, as we would like very much to recommend your magazine.

Very truly yours,
H. A. BRUNO.

Congress of the United States,
House of Representatives,
Washington, D. C.

Dear Mr. Marshall:

I wish to thank you for sending me the copies of your magazine, "Slipstream." As soon as I can find the time I will most gladly contribute you an article since I am thoroughly interested in your work and will be mighty glad to assist you in every possible way.

With best wishes, I am
Very truly yours,
ROY G. FITZGERALD,
6th District, Ohio.

U. S. Senate,
Committee on The Library,
Washington, D. C.

My Dear Mr. Marshall:

I would most assuredly like to assist you in your laudable enterprise and if at all possible will contribute you an article within a short time.

Yours very truly,
SIMON D. FESS,
Senator, Ohio.

Edward A. Deeds,
Mutual Home Building,
Dayton, Ohio.

Gentlemen:—I found awaiting me on my return to the city, five photographs of the Western Mountains made by Lieuts. Macready and Stevens which are the most remarkable ones I have ever seen.

I certainly appreciate your kindness in sending them to me, and I want to wish for "The Slipstream" an especially successful New Year.

With kindest personal regards, I remain,
Yours sincerely,

COL. E. A. DEEDS.

State of Idaho,
Senate Chamber,
Boise.

My dear sir:

I note that your January number will be off the press soon, and I am very anxious for it to arrive.

Anything I am able to do in spreading information, or if I can, through my rather limited influence secure suitable air service Congressional appropriations I will be very glad to lend my assistance to this end.

We have much irrigation in this country including the American Falls project which occupies the attention of Congress to a certain extent now. All of this territory should be photographed and I should like to see my brother, Lieutenant A. W. Stevens, assigned to this work the coming summer.

Thanking you for your courteous letter, I am,

Very truly yours,
R. E. WHITTEN,
Bell, Calif.,
321 N. Gifford Ave.,

Editor, Slipstream Bell Calif., 321 Gifford Ave.,
Dear Sir: Jan. 25, 1924.

Due to the publicity accorded your magazine in Aviation "Publisher's News Letter," I am interested in knowing about your magazine.

I don't know if it is your policy to send sample copies, but if so, I should like to receive one along with subscription rates. I am,

Yours very truly,
William L. Lewis,
2d Lieut. A. S. O. R. C.

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SOME time in March four U. S. Army aeroplanes will take off from Santa Monica, California, for the first round-the-world flight.

They will follow a carefully-mapped course up the Pacific Coast to Alaska, across the Pacific, touching one or two small islands, down the coast of Asia to Japan and China. Thence to India, across Asia Minor, over Europe to England. And then, finally, home by way of Iceland and Greenland.

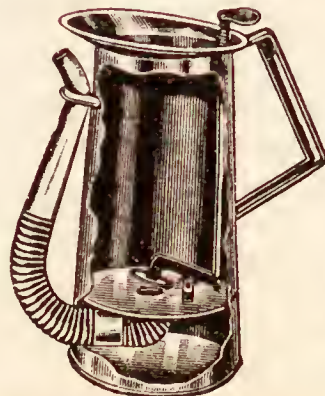
They will be groomed and tuned to perfection before the start. And inasmuch as an attempt will be made to establish a record for time, every precaution will be taken to equip landing fields along the way with the most efficient equipment for fueling, oiling, and servicing each ship.

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AN ITALIAN NAVAL AIRCRAFT DEVELOPMENT

Officers of the Regia Aeronautica, the new name for the Italian Air Force, at Montecello aerodrome are now practicing landing and flying-off the decks of ships.

For this purpose the Genio Aeronautica, or engineering section of the Regia Aeronautica, has built a special platform 150 metres long by thirty metres wide, in the form of the deck of a ship.

From this one may gather that Italy aspires to an aircraft carrier. It has been reported that a steamer of 4,000 tons is being adapted for use as a carrier, and that the work of conversion was put in hand at Spezia last year for completion this year.

Whether it will be an aircraft carrier in the true sense of the word without a flying-deck, or not, is not known, but one is inclined to assume that the practice flying at Montecello is being done with a definite object.

Colonel William A. Bishop, the British "Ace of Aces" who has seventy-eight enemy planes to his credit during the World War, recently arrived upon a friendly visit to this country. We imagine the R. A. F. considers him a handy fellow to have about in war times.

Torpedo Plane Squadron Twenty Arrives at Pearl Harbor

Torpedo Plane Squadron Twenty, that left San Diego on January third on the USS *Vega* to join the Asiatic Fleet, arrived at Pearl Harbor, Hawaii, on January 12. After a short layover at the Naval Air Station at Pearl Harbor, the Squadron, under the command of Lieut. Commander G. D. Murray, will proceed to the Asiatic Fleet.

RIGA, Jan. 15.—Sixteen foremen and mechanics from German airplane factories left Riga last night en route to Moscow. The spokesman of the group said they had expected to be spread among airplane factories in Petrograd, Moscow, Samara, and other cities. Many more German mechanics are preparing to leave for Russia, according to other members of the group which arrived here Saturday. They said they were told by the Bolshevik trade delegation in Berlin that they would direct the manufacture of 300 war airplanes which Russia hopes to manufacture this year.—Chicago Tribune News Service.

The Marine aviators at Santo Domingo, D. R., harked back to the days of Cortez, when they went to salvage a wrecked plane that had landed in the wilds of the Dominican Republic on January second. On the fifth, three planes landed within two miles of the wrecked plane, and the men pushed through the jungle to the scene of the mishap. A report from Santo Domingo concerning the trip back with the salvaged parts reads as follows: "This was supposed to be a salvage and wrecking expedition, but it soon turned into a tropic exploring party. The Spanish Conquistadores must have been good. The return trip through the swamp, loaded down with salvaged parts, will be long and fondly remembered by those concerned."

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(Continued from Page 15)

air. Many pilots' opinions vary with the designers, but rarely do pilots' opinions vary among themselves, although test pilots do have set opinions, one of which is, that the necessity of balanced ailerons and elevators on the smaller types of planes, is an admission of mistake in design.

Personal safety is naturally foremost in the pilot's mind previous to an initial flight, but the hardest thing for any test pilot to do is to refuse to fly a new plane. Many times a pilot wonders whether part of the usual crowd witnessing initial flights is really interested in the pilot making a successful flight, or whether it is trying to satisfy its morbid curiosity by expecting a Roman holiday.

The New York Herald says: "So long as we maintain an army and navy it is foolish not to maintain an air force which can gain the mastery over any forces likely to be brought against us."

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J. L. DONALDSON STARTS "SAFETY FIRST" BRAKE SHOP

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Mr. Donaldson has installed an entirely new outfit of special machinery for relining brakes on all automobiles and trucks, both gasoline and electric.

With the new city ordinance pertaining to the safety of brakes soon to be rigidly enforced by police inspection on all cars of Dayton, Mr. Donaldson contemplates being able to accommodate a far greater number of patrons, in less time and at a cheaper rate than by the old method.

Aside from his all-round mechanical ability Mr. Donaldson is especially trained in the adjusting and relining of brakes, he having devoted considerable time to this phase of auto repair work during his twelve years in this business.

He has furthermore surrounded himself with a force of the best mechanics that could be found, which has been the secret of the high standard held by this firm among the local service concerns.

To have your brakes properly taken care of it is as necessary to have expert mechanical attention as in the case of your ignition, or various motor ills. For ignition trouble you naturally do your best to secure an expert in this phase of the work to assure you of a quick job, a reliable job, and an inexpensive job.

Did you ever stop to figure how much of your good money you pay out for "labor," just because a green repairman spent many extra hours either looking for your trouble or tinkering about in an aimless manner.

The DONALDSON firm is in position to offer you expert service in adjusting and relining your brakes and give you a flat rate on the work you want done. A call at this place will convince you of the efficient methods used by this firm.

Upon the other hand it might be a good tip to all car owners to have their brakes looked after without delay and not run the risk of being caught up by the officers and fined for non-observance of the new brake ruling.



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it's the *ground!*'

Formerly, exact knowledge of the country over which you were to travel was largely a question of convenience. Now it is often a matter of more vital importance.

Air travel has made positive the necessity that information as to the *ground* be accurate—for routes, location of landing fields, topography, distances and a myriad details. Air travel has thrown an unprecedented responsibility upon *maps*.

Officers of the U. S. Army Air Service use RAND McNALLY Maps in their record-breaking flights because of the *invariable accuracy* which has made the word "maps," wherever heard, mean RAND McNALLY.

RAND McNALLY & COMPANY
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THE C. L. RADIO COMPANY, which recently opened business in Dayton, Ohio, has as its two head officials men who can be classed as pioneers in Radio.

Roy Stanley Copp, president of the C. L. RADIO COMPANY, Inc., and Carl J. Linxweiler, secretary and treasurer, were former owners of private radio experimental sending and receiving stations.

In 1915, Linxweiler was issued the first U. S. Government operator's station license to amateurs of Dayton. Copp soon afterward received a similar license.

Mr. Copp enlisted in the Radio Branch of the U. S. Navy during the war in 1917 and was appointed Chief Radio Electrician in charge of the Radio Telephone station at Corfu, Greece. He received the Medal of Honor for distinguished service, from the Italian government. Mr. Copp was also active in Radio experiments at McCook Field after the war.

Mr. Linxweiler is a graduate of the Electrical Engineering College of Ohio State University and later entered the graduate school of this institution, specializing in Radio. During the summer of 1923, Mr. Linxweiler went abroad investigating the larger trans-Atlantic Radio stations of Europe.

It stands for itself that the C. L. RADIO COMPANY, INC., 16 East Fourth Street, Dayton, Ohio, is in position to give their patrons expert advice and instructions toward working out their various Radio ills, while their stock of Radio equipment is complete and of the highest quality.

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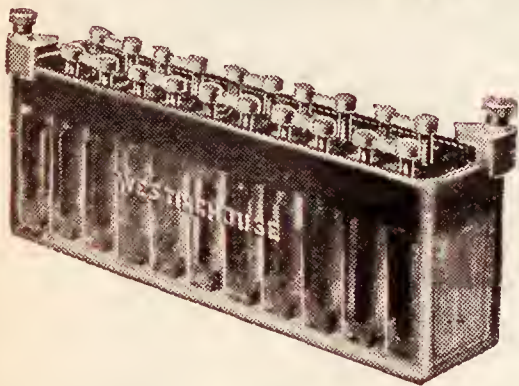
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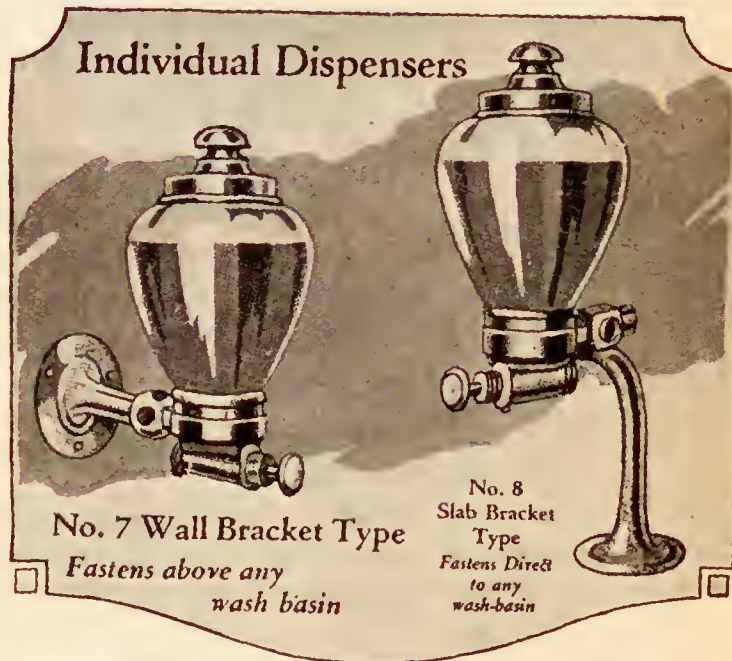
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Photo by Aeromarine



Above is the All-Metal Hull—the outstanding feature of the latest Aeromarine Flying Boat. It is built entirely of "Duralumin"—a copper-manganese and aluminum alloy.

To protect it from water and weather it is painted outside with Valspar Aluminum Paint, and with Valspar-Enamel inside. The wing-tip pontoons are finished with Valspar Aluminum Paint; the tail unit, which is constructed with a metal framework, is coated with Valspar, covered with cloth, doped and then coated with black Valspar-Enamel.

A New Departure in Flying Boats

"IT would leak like a sieve"—that's what many boat builders predicted of the first all-metal hull of the flying boat recently launched by the Aeromarine Plane and Motor Company of Keyport, N. J. Others said it would be "too heavy for the plane to lift,"—"that it could never stand salt water."

But to date this boat has spent several months actually *in* the water, has made hundreds of flights and carried many hundreds of passengers. And still no hint of the troubles prophesied!

In the matter of finish, of course, there has been no departure from established practice—the ship is Valsparred throughout. Chief Engineer Paul Zimmerman well knows that no varnish but Valspar can withstand the constant exposure to rain and sun, snow, salt water and the racking vibration of airplane flight.



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From a 7-ton flying boat to a single seat fighter is the useful range for Wright "T" Engines. The procurement of engines must be planned long in advance of the construction of planes. Therefore, the adaptability of an engine for use in many types of planes is the most reliable safeguard for the purchaser.

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Only the wide experience of the Wright Organization in correct aeronautical engineering practice and design makes possible this reliable versatility in Wright Engine Performance.

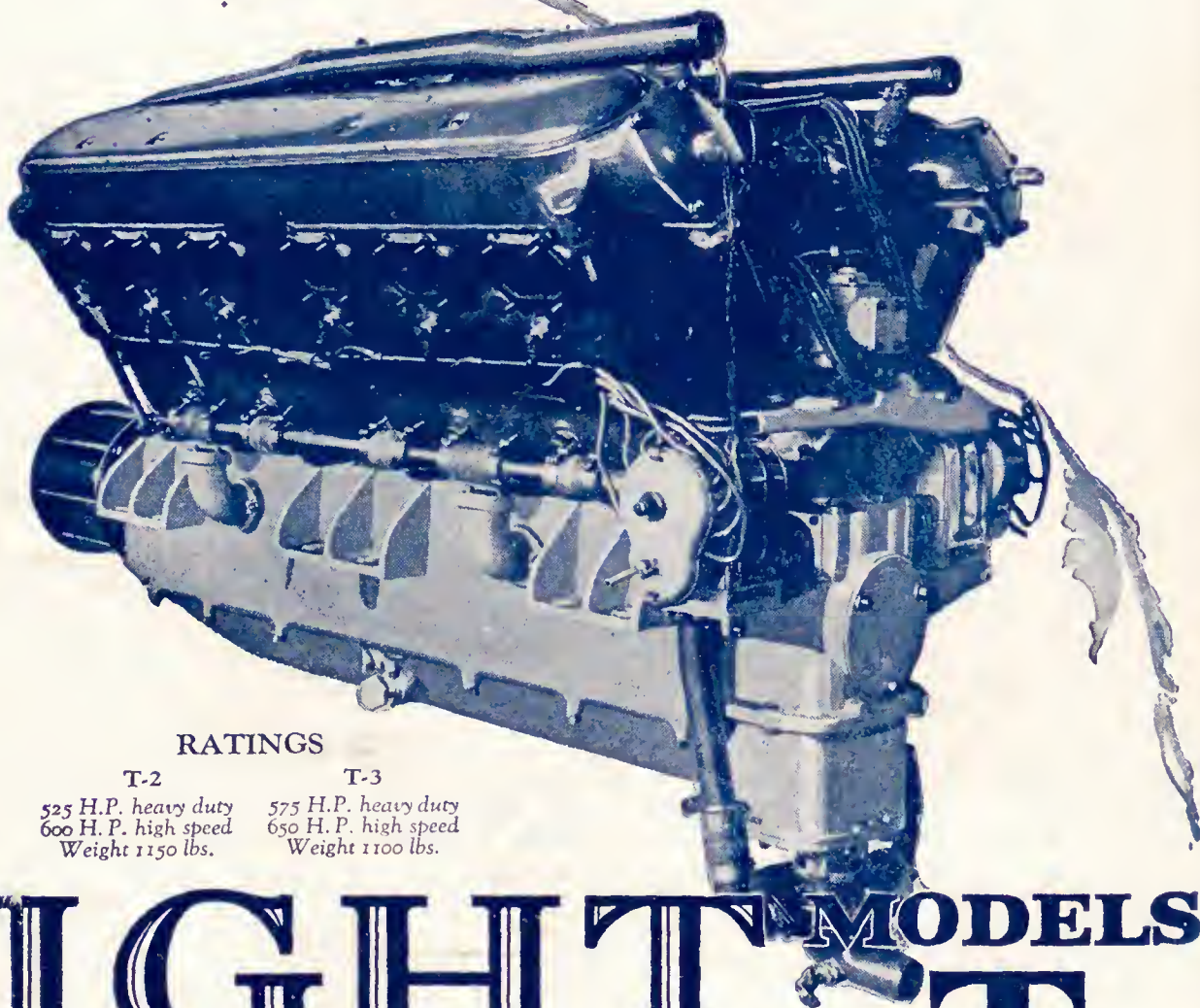
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Incomparable
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Wright "T" Engines are being used in the multi-engine Navy PN-7 flying boat. Wright "T" Engines were worthy competitors in the recent races for high speed single seat planes both land and sea. They are equally well adapted for the intermediate planes such as bombers, observation planes and two seaters



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525 H.P. heavy duty
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NEWS of the AERIAL WORLD

THE

SLIPSTREAM

MONTHLY

PUBLISHED IN DAYTON OHIO

"THE BIRTHPLACE OF THE AIRPLANE,
THE CENTER OF AVIATION"

APRIL
Vol. 5 No. 4

Klein
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20 Cents the copy

Airway Age



THEY'RE OFF!!! Soon
TO FLY AROUND THE WORLD. Read the Story
Also Many Other Timely Articles of Interest Concern-
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Santa Monica, California

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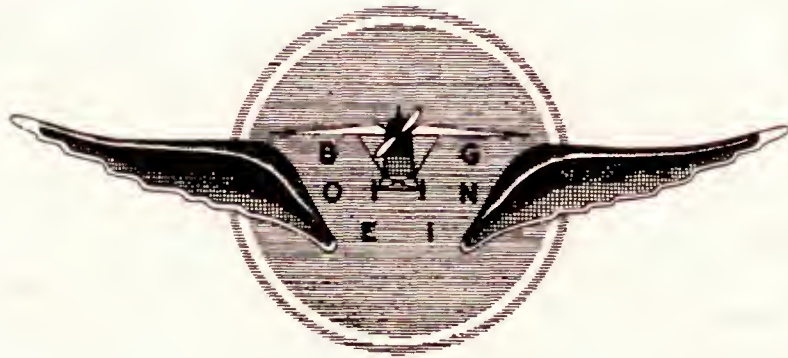
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THE WORLD'S MOST EFFICIENT
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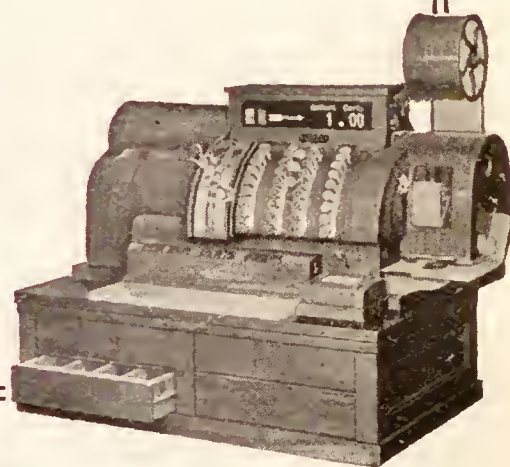
What a National Cash Register means to you as a customer

WHEN you see a National Cash Register on a merchant's counter, you know that you are going to receive quick, accurate service. Long, tiresome waits for parcels and change are eliminated in the store where cash registers are used.

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The National Cash Register Company
Dayton, Ohio



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For three years they were tested and proved under all conditions. Today hundreds of thousands of motorists are enjoying the unequalled service provided by these pioneer low air pressure tires.

Free Tire Service and Repairs

Besides the low air pressure advantages of Dayton Thorobred Cords you get free tire service and repairs until the tires are worn out. Stop at our Service Station; or call "Main One—Dayton Tires" and a service car will come to you anywhere in the county.

Use these pioneer, comfortable low air pressure tires. Enjoy a degree of motoring satisfaction heretofore unapproached. Get the greatest tire value and the most complete tire service ever offered to tire users.

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Master Cords are kept in repair free. Delivery Free on the road, at your home, or at our Service Station, 234 South Main Street.

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30x3½ S. S.	12.00	34x4	20.00	33x5	30.00
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Ethyl Gas prevents this so-called "knock" and by so doing allows the motor to operate at all times with fully advanced spark, or in other words with maximum efficiency.

THE REFINERS OIL COMPANY

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VOL. 5

APRIL

NO. 4

PUBLISHED BY THE SLIPSTREAM PUBLISHING COMPANY

408 Beckel Bldg., Dayton, Ohio

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FRED F. MARSHALL Editor and Business Manager

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Enclosed find \$1.75 which entitles me to one yearly subscription to *Slipstream* (12 monthly issues), beginning with the.....issue.

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THE EIFFEL TOWER

The mighty 1,000-foot structure of steel girders built by Gustave Eiffel, noted engineer, as one of the attractions of the Paris Exposition of 1889. The tower is now doomed either to total destruction or complete rebuilding. To see this famous landmark razed would be viewed with regret by thousands of people from all parts of the world who have come to identify the lofty structure as a perpetual fixture of the Parisian sky line.

The huge Ferris wheel, another Paris curiosity seen in the right background of the accompanying photograph, was dismantled shortly after the World War.

GUSTAVE EIFFEL

Aeronautical Pioneer Passes at Advanced Age

THE work of Gustave Eiffel has been of incalculable value to the development of aviation, and forms a monument greater and far more lasting than that which the general public will mainly associate with the name of the Engineer.

Sooner or later the famous Eiffel tower must either be dismantled or rebuilt, until no part of the original structure remains, but the published works of Eiffel, not to mention the knowledge and experience which these works have diffused into aeronautical circles throughout the civilized world, will endure forever.

Alexander Gustave Eiffel was born in the town of Dijon, a city familiar to thousands of American soldiers who had a part in the Great War in France. He was early educated as an engineer and graduated from the Ecole Centrale des Arts et Manufactures in 1855 and was thereafter for some time engaged in the construction and design of bridges.

His first important work along this line was completed in 1858 with the building of the railway bridge across the Garonne at Bordeaux. A serious problem lay in the way of this project with the habit of this swift-flowing stream to sweep down periodically in serious floods. By means of compressed air, in sinking the great piers a hundred feet below the surface, Eiffel succeeded.

It was in 1886 that Eiffel offered the great tower project as a feature of the Paris Exposition of 1889. After much opposition, both technical and aesthetic, the huge structure was finished for the great event. The successful building of the tower carried Eiffel's fame to the four corners of the earth and proved many of his theories as correct.

Certain of the French people have regarded the tall tower as not in keeping with the general layout of Paris architecture, but its popularity in the eyes of the tourist and visitor to Paris has drowned this sentiment. Paris would not be Paris without the famous tower which can be seen from almost any point either in or about the French capital.

During the war and for some time after the armistice was signed the great structure was closed away from the public and closely guarded, but in the summer of 1918 the elevators were again set to working to accommodate the throngs of sight-seers. Several sets of elevators are used in making the journey to the summit of the one thousand foot tower, where several souvenir



World Wide Photo

Gustave Eiffel, noted French Scientist (seated) in his laboratory.

booths are run together with a post-office station where one may mail a picture post card stamped with the unique mark, "Sommet de la Tour Eiffel." Stairways are also provided for the more energetic and ambitious visitors, but it is seldom the case that one's ambitions hold out beyond the limit of the first landing, where one gets the first conception of the immensity of the structure.

AS a wireless station the Eiffel Tower has proven a great worth from a practical point of view. A popular war time story has maintained that the tower virtually saved Paris during those trying times when the German army was pounding at her very doors. The story goes that a wireless message sent from the General staff headquarters of the German army was intercepted by the Eiffel Tower station and furnished information for the counter attack at the crucial period which flung back the invading forces.

But from the standpoint of aviation, the work of most interest accomplished by Eiffel is in connection with aerodynamics. We, therefore, feel it well to devote our principal attention to the discussion of these works.

Having been for a number of years interested in meteorological subjects, and as the author of many important works on meteorology, Eiffel began to turn his attention to aerodynamic problems, and in 1907 he published his first work on this subject, entitled "Recherches Experimentales sur la Resistance de l'Air executees a la Tour Eiffel." In 1910 came "La Resistance de l'Air. Examen des formules et des Experiences," and in 1911 the famous "La Resistance de l'Air et l'Aviation," giving the results of experiments carried out at the Champ-de-Mars laboratory. This was, perhaps, the volume which more than any other made Eiffel known throughout the world, and its popularity in English-speaking countries was in no small measure due to the excellent translation by Jerome C. Hunsaker (now Assistant Naval Attache at the American Embassy in London) published in 1913.

In 1914, just before the outbreak of war, was published the volume entitled "Nouvelles Recherches sur la Resistance de l'Air et l'Aviation." This work gave particulars of the work carried out at the laboratory at Auteuil, whence Eiffel had in the meantime transferred

from the Champ-de-Mars laboratory. Incidentally it is of interest to note that the earlier experiments made by Eiffel were made by dropping various surfaces from the Eiffel Tower, and by timing their fall through a given distance the forces on them were deduced from consideration of the weight of the surfaces.

Perhaps the last great work of Eiffel's to become known in wide circles was his "Resume des principaux travaux executes pendant la guerre au Laboratoire Aerodynamique Eiffel, 1915-18," which was published in 1919. As the title indicates, this work contained a resume of the very valuable experiments made during the war, and needless to say proved of surpassing interest in view of the scarcity of published data during the four years of war.

What makes Eiffel's life and work all the more valuable is that his aerodynamic researches were not carried out with the object of making financial gains. In fact, within the time at his disposal Eiffel was always willing to test models of new designs, be they wing sections, fuselages, or complete machines, free of cost, the only stipulation made being that the results of the tests should be published in his works so that the knowledge gained might be available to all. The loss of Gustave Eiffel is a serious one, but his memory will live forever.



Progress of the U. S. Air Mail Service

The Postmaster-General recently issued the annual report on the operation of the air mail service during the fiscal year ending June 30, 1923.

The report is in part as follows:

The operation of the air mail service during the period under review was confined to one transcontinental route from New York to San Francisco. Landing fields on this route are located at New York, N. Y.; Bellefonte, Pa.; Cleveland, Ohio; Bryan, Ohio; Chicago, Ill.; Iowa City, Iowa; Omaha, Nebr.; North Platte, Nebr.; Cheyenne, Wyo.; Rawlins, Wyo.; Rock Springs, Wyo.; Salt Lake City, Utah; Elko, Nev.; Reno, Nev.; and San Francisco. The total length of the route is 2,680 miles.

The appropriation for the year for the service was \$1,900,000; the expenditures were \$1,774,151.85.

During the year a total of 1,809,028 miles were flown by air mail planes carrying an estimated total of 67,875,840 pieces of first-class mail. A performance percentage of 96.72 was made for the year's operation.

Certain valuable additions to the ground preparation of the route were made, notably a warehouse, repair base, and hangars being erected at Chicago, Ill. Practically all the work that is necessary in the preparation of a lighted airway between Chicago and Cheyenne has been done, and successful tests have been made. A service over this route under these conditions will be the first attempt made in the world to operate aircraft at night on a regular schedule.

Despite this creditable showing of the Air Mail Service for the last year it appears that Congress is somewhat backward about passing the measure for a \$3,000,000 appropriation asked for by Col. Paul Henderson, Assistant Postmaster-General, to carry on the Air Mail Service during the next fiscal year.

It is generally conceded that the U. S. Air Mail record has no parallel in the world. Its plans of operation are studied and envied by the other nations, who have awakened to the possibilities it offers. England, especially has watched this progress with intense interest and is using our accomplishments in influencing such service in the British empire.

To have Congress refuse this appropriation would be a serious blow to aviation, both material and psychological, in this country. The editor of "Slipstream" asks the readers of this magazine to communicate with their Government representatives and urge their support of the Air Mail appropriation.

The lighter-than-air activities at the Naval Air Station at Hampton Roads, Va., are to be transferred to the Naval Air Station at Lakehurst, N. J. The non-rigid dirigible C-7, which has been deflated, will remain at Hampton Roads and the non-rigid airship J-1 will be sent from Hampton Roads to Lakehurst, where it will be inflated with helium and used for training purposes.

THE INTERNATIONAL AIR RACES, INC.

An entirely new and unique feature in connection with the International Air Races of 1924, which will be held in Dayton, Ohio, October 2, 3, and 4, was inaugurated recently when the sub-committee, appointed by the Executive Committee, Dayton Chapter, N. A. A., decided to incorporate the stupendous race project. In the future, the event will be referred to as The International Air Races, Inc. Papers of incorporation of this organization have already been drawn up.

Another feature of interest lies in the appointment of C. H. Paul, Dayton, as manager of the big event. Mr. Paul gained international prominence through his connection in the great Miami Conservancy project, where he occupied the position of chief engineer of the entire flood prevention district.

It was the opinion of the Executive Committee that a Dayton man of high standing and business ability should be at the head of the international contests, and the members feel that they are fortunate in having Mr. Paul's acceptance of the responsibility.

Mr. Paul will have an able assistant in Hugh W. Robertson, of Detroit, who is already well known in aeronautical circles, having been active in the various programs of the National Aeronautical Association for the last several years. His name is also closely identified with the air races held at Detroit two years ago and at St. Louis last year.

W. R. Craven, President of the Dayton Savings &

Trust Company and treasurer of The International Air Races, Inc., expresses assurance that the \$150,000 guarantee fund for the event will be pledged without any trouble.

Plans are now under way for adding two more races to the original program of twelve outlined by the committee.

With the recent activity in aviation evidenced in National Guard bodies it is hoped to include a race for this branch of the Army.

For the other event it is planned to authorize a separate "On to Dayton" race for Army, Navy, Marine, and National Guard entries. The original "On to Dayton" race was planned for civilians exclusively.

* * * *

Mr. Paul, with his assistant, Mr. Robertson, together with B. Russell Shaw, member of the Contest Committee of the N. A. A., visited the site of the 1924 races at Wilbur Wright Field, on March 12. Plans were outlined for the handling of an enormous throng of sight-seers.

Tentative locations for automobile parking spaces were laid out close to the private Government roads leading into the big flying field, there being sufficient suitable space for at least 20,000 machines parked in positions that would permit the occupants to have an unobstructed view of the field and home pylon. Seating facilities will be erected along a one-mile front, where the topography of the ground forms a novel sloping amphitheater.



A photo of the first entry in the Dayton News Race for light planes, a feature of the International Air Races of 1924. This diminutive ship is known as the "Baby Bomber," and was built by Bud Snyder, of McCook Field. It is powered by a twin-cylinder Indian Motorcycle engine and has already proven its air worthiness. The Daily News Race will no doubt draw many other light planes after this type to compete for the substantial sum of \$3,250.00 in prize money.



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Fred F. Marshall, Lieut. O. R. C.....Editor and Business Mgr.

Airplanes for Sight-seeing

Contrary to the popular belief air travel is not going to be difficult to "sell" to the general public. Once a person is induced to venture into the comfortable interior of the passenger compartment of the modern air liner he takes on a feeling of utter complacency and a genuine lure to experience the thrill of flying.

It is only the persons who have never flown in an airplane who voice their skepticism for air travel.

For sight-seeing the airplane especially opens vast possibilities for the tourist. Viewing the passing scenery from the sooty window or from the cinder-spattered platform of the railway coach holds little appeal once a person stops to figure just how much he is missing as he is rattled along and shut away from time to time from the very scenes he came to see. A glimpse now and then between the cracks of bill boards or rows of freight cars is just enough to disgust one with the limitations in touring by train.

Aerial travel opens the way for one to view the beautiful things of the world from a veritable "grandstand on wings." Commonplace objects take on features of new interest. The roadways, the rivers, the shaded villages, the farmhouses, the plowman in the field viewed from this singular and lofty pedestal seem as parts of the vista of a dream set especially for your pleasure. You are the pivot object, the hub of a great swaying, slowly changing, expanse of fairyland—after all nothing more than the busy old mother earth as seen on a clear day some 2000 feet aloft. Yes, we prefer to do our sight-seeing from the comfortable stateroom or cockpit of the airplane.

The Use of Instruments in Airplanes

The importance of the study of instruments used in an airplane lies in the fact that it aids a pilot to do more intelligent flying. It is generally thought that instruments are necessary for ordinary flying, and that the information derived from them is absolutely necessary to keep a machine in the air. This, of course, is not true. A pilot, under normal conditions, flies perfectly naturally, accepting the wings and tail plane of his machine with their controls as if they had always been there, and using them automatically. In riding a bicycle, it is not considered necessary to have an instrument to tell one which way the bicycle is tipping, as

the control of the rider instinctively corrects any error of balance, and this sense of speed and balance is just as true in airplane work. The importance of an instrument becomes evident only under abnormal conditions, and their use is justified at these times, but ordinarily instruments are simply observed as a matter of curiosity on the part of the pilot and to confirm a condition that has already become apparent to his natural sense. In other words, on a calm, clear day, once having left the ground, the pilot needs no instruments unless he wants to make a cross-country flight with a compass to tell him his course. Calm, clear days, however, are rare things and it is, therefore, necessary to guard against the danger of clouds, fogs, mist, storms, and darkness, by providing instruments to aid the pilot in continuing his flight safely, and as the real use of these instruments is evident only when a pilot is under stress of extraordinary circumstances, it can be seen that considerable attention should be paid to them, and the relation they bear to intelligent flying under these dangerous conditions.

A pupil should study as much as possible the information an instrument is supposed to give, the principle upon which it is constructed, and the errors to which it is subject under different conditions. All pilots will want to know the various instruments with which they will be confronted when they sit in a pilot's seat in an airplane for the first time.

The instruments used on machines of service type are:

1. Aneroid or altimeter.
2. Air-speed indicator.
3. Tachometer or revolution counter.
4. Compass.
5. Inclinator.
6. Watch.

In addition for machines using pressure feed for gasoline and oil to engine:

7. Air-pressure gauge.
8. Oil-pressure gauge.
9. Air-pump, hand.

And on water-cooled engines:

10. Thermometer.

These instruments can all be seen by the pilot while sitting in his seat and each instrument used has a small electric bulb furnishing light for night flying, which can be switched on when needed. Machines which do not do night, or late-in-the-day flying, such as scouts or fast landing machines, usually have the electric circuit removed to save weight. Most instruments are now made with illuminated dials.

Educate the Youth

Some months ago when Frederick Patterson, newly elected president of the National Aeronautic Association, was sending out requests for suggestions as to which phases of the great cause for furthering aviation the organization might foster to best advantage, Slipstream stressed the point of EDUCATING THE YOUTH. It is particularly gratifying for us to note at this time the growing interest in the new "Junior Flying League" branch of the N. A. A.

Here it seems lies the solution to the problem of bringing aviation into its own as an important factor in the social and commercial life within the next few years.

Records will show that aviation already deserves such a place in the affairs of the world. The airplane has proven itself as beyond the experimental stage. Many factories were turning out automobiles on a big production basis long before they had reached the present state of reliability and perfection of the airplane. What then is the cause of the

lack of interest on the part of the public? We believe the principal cause lies in the failure of the people to make a mental adjustment in the presence of unusual and rapid progress in the art of flying. People of middle age and older as a general rule are not so easily persuaded to have full confidence in this new and startling invention. They watch and marvel at the airplanes soaring majestically overhead but entertain pretty conservative enthusiasm about venturing aloft as an airplane passenger. Not so, the youth of school age. To them the airplane is not regarded so much as a new and yet dangerous vehicle. As far back as most of them can remember they have either seen or read about aviators and airplanes. Every red-blooded schoolboy dreams of becoming an airplane pilot and the commercial flying parks look primarily to the "flappers" for a big part of their passenger business. The youth, in fact, is sold completely on aviation.

It appears practical therefore, that every attention should be paid in assisting the school youth to a proper education in aeronautics, and in this way bring aviation into being on a basis as sound as the train of mind of the new generation.

Government Competition

The general public in its enthusiasm and attraction to the more sensational side of aeronautical accomplishments has little or no conception of the many prosaic problems of business which confront the manufacturers of aircraft and aircraft accessories.

Throughout the history of aviation in this country the Curtiss Aeroplane & Motor Company, Inc., has occupied a prominent place. Its specially built engines and planes have made it possible for America to bring back all of the important speed records of the world and establish new standards of performance which the nations of Europe are now striving to equal. Curtiss ships, powered with Curtiss motors, have won the Pulitzer Trophy in 1921, 1922, and 1923, and established new records in each of these three years.

It is with regret we learn that this leading company of the aircraft industry is forced to curtail its engineering force and restrict its activities along all lines of aviation promotion in order to meet the present situation.

It appears from this that the outlook for the entire airplane industry is vague and uncertain. When a company like the Curtiss Aeroplane & Motor Company, Inc., universally recognized as a creator, becomes discouraged with conditions there is something radically wrong.

The whole trouble seems to lie in a condition which has forced our Air Services into competition with the industry, both in engineering and construction, and has established price as the controlling factor in procurement. It does appear that the Government has a settled policy, that whenever possible, airplanes shall be purchased below cost of production, while in no case does it permit a percentage of profit on production orders to be higher than the customary formula in the manufacture of articles of standard type for which there is a constant demand.

It is also pointed out by various prominent aircraft manufacturers that there is a strong tendency toward a government monopoly of engineering and development work and the consequent elimination of private incentive.

The fact is that outstanding accomplishment in the industry for the benefit of the Army and Navy does not lead to the placing of substantial contracts with those whose money has been spent in the carrying out of great adventures. As soon as new standards are set, at great expense, no doubt, in effort and money by private companies, their successes are immediately copied by others who have no great engineering expense to absorb. Consequently, units in the

industry, organized solely for small production work, can and do sell products below the cost to the original creator of the type of motor, plane, or accessory involved. We might for example, call to mind such an incident in connection with the well-known Martin Bomber, perfected at an enormous expense by the Glenn L. Martin Company, of Cleveland, Ohio. When the Government saw fit to purchase a number of these planes they sent out for bids from various companies to supply them, the result being that the Glenn L. Martin Company, originators of the type, were underbid and the big order went to another firm.

Another example is recalled in the new wing on the Curtiss Racer of 1923, developed at the expense of the Curtiss firm, but immediately broadcasted to the trade by the Government so that thereafter the value of the invention ceased to its inventor and inured to the lowest bidder on construction contracts. The Curtiss firm is subjected to the same condition in respect to their advanced type of plane for use by the U. S. Navy, which they spent several hundred thousand dollars to perfect. Proprietary rights on this ship are reserved by the Government and it now appears likely that a quantity order for these ships will be offered to public competition so that the fruit of the Curtiss firm's expenditure may be gathered by those who do not risk capital to accomplish advances in the art on behalf of the Government.

This system is all wrong and it is evident that it will mean the ultimate ruin of the aircraft industry.

"Get the Dumb-bell Trophy!!!"

The March 3 issue of an eastern aeronautical weekly in a leading editorial under the title, "The Site for the Engineering Division," was evidently designed to dampen the ardor of Dayton citizens who have been entertaining the happy thought that their city is assured as the permanent home of the new McCook Field.

"That it is settled that it should be at Dayton is not, as far as we can learn, a unanimous view even in the Air Service," claims the magazine, while from the general undercurrent of the article it is quite apparent that the editor would be well pleased to see the Engineering Division removed to some point nearer his own dooryard.

It is amusing to note that the weekly asserts the principal objection to the Dayton site to be "in the time lost by the Air Service in securing information necessary for its contractual negotiations, and by the constructors, who spend such a large part of their time on trains between their factory, Washington and Dayton. . . That a site located nearer Washington would have a great advantage."

How inconsistent this argument seems in the face of the statistical summary of the Air Mail Service appearing on the same page! Here the aeronautical enthusiasts are drumming into the ears of the public the advantages of aircraft as time-savers, with distance as no barrier in speedy, comfortable and safe transportation. Again we read within the last fortnight of two Dayton aviators who flew from Dayton to New York City in considerably less than four hours—and this organ of the aeronautical industry dares assert that the distance of Dayton from Washington is an adverse and important argument against selecting it as the new air site.

If this is true, then we have been duping the public; the airplane, the Model Airway, the Air Mail Service is still a thing not to be regarded as of practical significance.

Buffalo joins the ranks of aviation boosters with the establishment of a municipal flying field by the city council. The city is now dickering for air mail service and a training station for army reserve aviators.

*International Newsreel Photo*

The dogs have been having the laugh for years in the Mother Goose rhyme. However, the cows in the pasture, near the Government Wireless Station at Inglewood, Calif., thought they had the laugh on the dog. They thought that Jack, a brindle bull owned by R. H. Wells, was trying to jump over the moon when he leaped out of an airplane 800 feet in the air. But he wasn't, Jack had a parachute. So he soared over the field and made a safe landing. Photo shows—Jack, just leaving the plane; as he appeared when he landed, and a closeup of the jumping dog, known as Jack.

Fairchild Aids Commercial Flying

Aerial photography offers operators of commercial planes a new means of revenue, without purchasing photographic equipment or hiring expert photographers.

The growth of the Fairchild Aerial Camera Corporation and the opening of branch offices throughout the United States and Canada have necessitated the use of additional aircraft in places where the companies own fleets of planes and are not operating them. It has always been the desire of Sherman M. Fairchild, President of the organization, to stimulate and help the growth of commercial flying in every way. This is being done by using planes owned by private operators whenever possible.

In the vicinity of New York the company maintains its own planes which are especially adapted for photographic work. Pilots of commercial planes having machines suitable for the taking of aerial photographs now have an opportunity to establish profitable relations with the Fairchild Company which furnishes expert photographers and the necessary photographic equipment.

There are two classes of aerial photographs to be taken. The first is the oblique view and for this any good plane such as a DH or its equivalent can be used. Planes that throw much oil cannot be used. The second is the vertical photograph, the type taken on mapping flights. This work requires a plane in which a hole may be cut in the fuselage and the camera placed so that it points vertically downward and will take photographs without including any part of the plane. This machine must have a performance sufficient to carry two men and seventy-five pounds of camera equipment to a working ceiling of not less than 10,000 feet. In addition, at least three hours fuel must also be carried.

Richard H. Depew, who is in charge of the Flying Division for the Fairchild Company, has recently issued a request calling for information from operators of commercial planes all over the country. It is Mr. Depew's desire to list all available operators and whenever the company's salesmen close contracts, flying orders will be issued without any unnecessary delay and photographers dispatched to the operators' airdrome.

OXYGEN IN ALTITUDE FLYING

By J. E. Eshbaugh

NOT until twenty years ago were the untiring efforts of the Wright Brothers crowned with success, when their adventurous craft lifted itself gracefully above the earth and flew for the brief period of twelve seconds reaching a maximum altitude of four feet. Today the altitude record for the same type of aircraft is a height of almost seven miles. But, why strive for such seemingly worthless goals? Is it merely for honor and glory?

High altitude flying is only in its infancy, but the good which may be derived from such flights has already begun to play an important part in our industrial and national life. Forests, swamps, and mountainous territories which were previously considered impassable by the surveyor with his transit and level are now being photographed and mapped from high in the air. Picturesque mountain scenes, the beauty of which words cannot express, may be transferred to paper for the joy and admiration of all. Business men were quick to grasp the value of advertising their products by writing words in the sky which would leave an image deeply impressed in the minds of the people. Astronomical phenomenon may be studied from an unexcelled position far above the earth's dim cloudy atmosphere. Forest fires may be readily located and brought under control before their destructive flames become unmanageable. Unfortunate victims of stranded schooners or sunken vessels have been known to owe their lives to the airplane by means of which they were located and rescued.

No better criterion of the importance from a military standpoint of high-altitude flying can be given than the undreamed of value which was derived from such flights during the World War. Good photographs of enemy territory, fortifications, railroad terminals, ammunition dumps, etc., were considered indispensable. Combats above the clouds between high-power pursuit ships were a common occurrence. Bombing, the most destructive use of aircraft, was conducted from such great heights that those on the ground were defenseless with any weapons at their disposal. Even the advocates of anti-aircraft material admit that planes flying sufficiently high are safe from ground attack. The victory of the next war will be largely determined by the nation whose aircraft can climb the highest and fly the fastest. Air supremacy is the best guarantee of peace.

HAVING discussed a few of the reasons for making flights at high altitude, attention may now be directed to one of the inherent problems associated with such flights. The density of the atmosphere becomes gradually less as higher and higher altitudes are reached. In order to form a mental picture of this condition, let

us assume that a column of air one inch square and extending several miles upward has been replaced by blocks one inch square on an edge stacked one upon the other. If the blocks are made of an elastic material, those near the bottom of the column, being pressed down by the weight of all the blocks above, will be reduced in thickness a considerable amount, thereby increasing their mean density, while the blocks near the top of the column will be practically unchanged. The actual quantities of the various constituents of the air contained in a unit volume are approximately proportional to its mean density. For example, a cubic foot of air at 19,000 feet above the earth contains only about half as much oxygen as a cubic foot of air at ground level.

It has been found by experience that the activities of an aviator are hindered by the lack of oxygen in the atmosphere at any altitude above 10,000 feet. The usual effect of an insufficient supply of this life sustaining gas upon the individual is a drowsy, sleepy feeling much the same as one experiences while sitting in a warm unventilated room. The amount of oxygen as recognized by the U. S. Air Service which should be supplied to an aviator at various altitudes in order that his physical well-being may not be impaired is represented by Fig. No. 1.

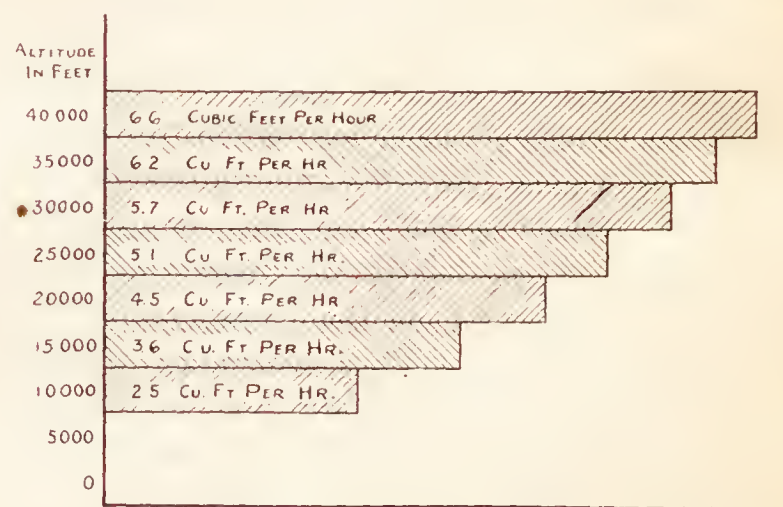


Fig. No. 1 Additional Oxygen Required for One Man.

Oxygen regulators have been developed to provide the aviator with oxygen just as the supercharger supplies the motor with the necessary amount of air for the most efficient combustion at any altitude. These instruments automatically proportion the oxygen from a source of supply and deliver it to the user at the required rate regardless of the altitude in which flight is being made. They may be divided into two groups depending upon whether the supply which they control is a gas or a liquid.

GASEOUS oxygen regulators are required to regulate the flow of gas from containers about four inches in diameter and eighteen inches long which have been initially filled with oxygen to a pressure of 2,250 pounds per square inch. By the use of this high pressure a relatively large quantity of oxygen may be stored in so small a container. In order that as much of the gas as possible may be available for use it is evident that the pressure in the container must be allowed to drop to as low a value as the design and construction of the regulator will permit. Some types of instruments are expected to function properly although the pressure of the oxygen in the container may drop as low as 150 pounds per square inch.

Practically all gaseous oxygen regulators embody an "aneroid controlled valve," as a basic mechanism (see

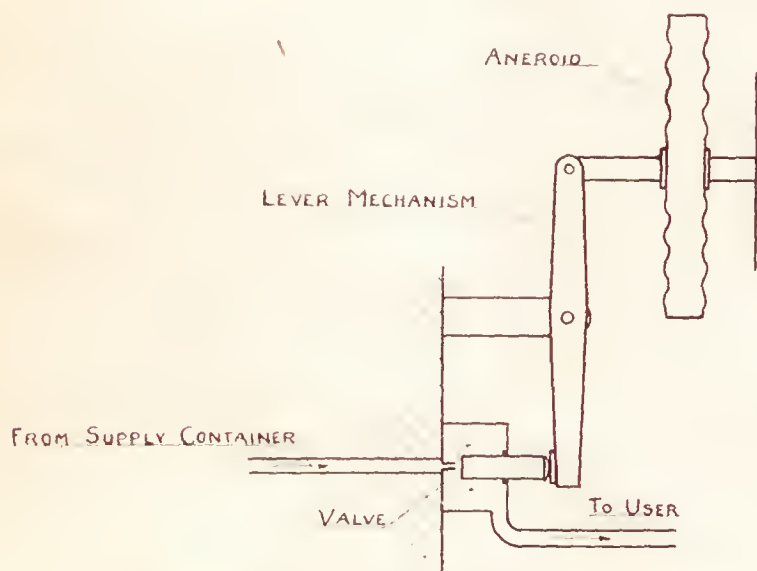


Fig. No. 2. Aneroid Controlled Valve.

Fig. No. 2.) An aneroid is an hermetically sealed chamber which when acted upon by a change of atmospheric pressure produces a mechanical motion. The movement of the aneroid is connected by a suitable lever arrangement to a valve through which the oxygen supply must pass. As the regulator is taken, say from an altitude of 10,000 feet, to an altitude of 15,000 feet, the corresponding drop in atmospheric pressure causes the aneroid to move in such a direction as to open the valve more widely, thereby permitting more oxygen to flow to the user. The flow will also be slightly increased at the higher altitude, since the "head" or "pressure" against which the oxygen is flowing has been reduced. With the proper combination of the two effects a discharge similar to that indicated by Fig. 1 may be obtained. Certain auxiliaries, such as reducing valves, flow indicators, orifices, by-pass valves, temperature compensating elements, etc., are found necessary or desirable in the construction of the actual instruments. Several typical regulators tested by the *Instrument Branch, McCook Field*, are shown in Fig. No. 3.

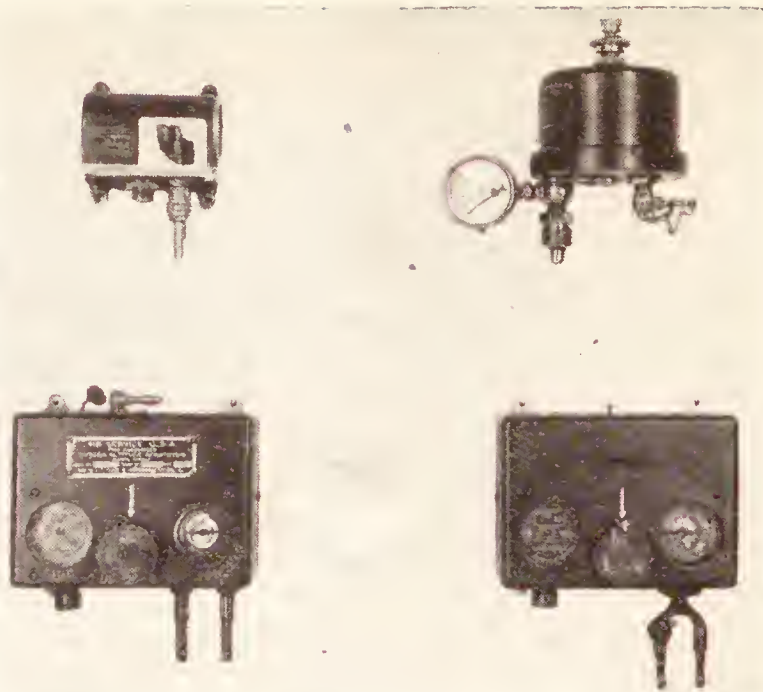


Fig. 3. Typical New Oxygen Regulators.

OXYGEN becomes a clear light blue liquid at about 180° below zero centigrade. It might easily be mistaken for water if one were to compare them by appearance only. Because of its extremely low temperature it evaporates readily. Upon evaporation very pure gaseous oxygen is obtained. The rate of evaporation depends upon the rate at which heat is conducted into the liquid and upon the pressure and temperature to which the liquid is subjected.

Instruments have been designed in an effort to obtain means whereby the rate of evaporation might be regulated to any desired value. With such apparatus liquid oxygen can be used on high altitude flights. Only a relatively small amount of the liquid need be carried along as each cubic inch of liquid will produce upon evaporation approximately 300 cubic inches of gas. Several instruments of this type are shown in Fig. No. 4.

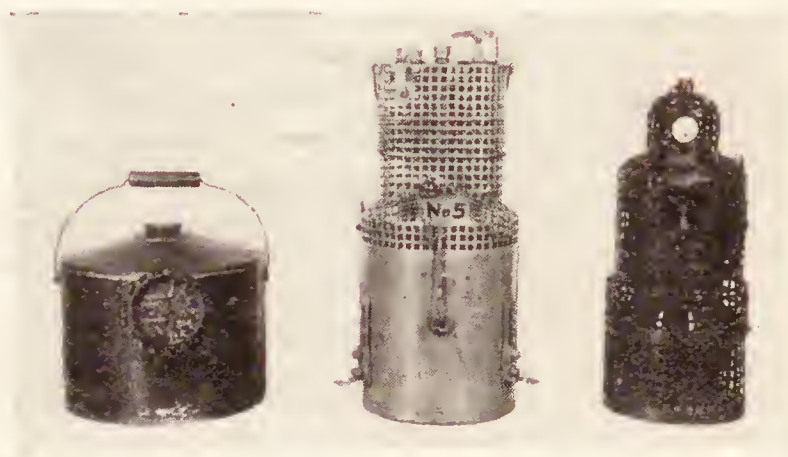


Fig. No. 4. Liquid Oxygen Regulators.

Lieut. J. A. Macready has used liquid oxygen on many of his noted high altitude flights with perfect success. This means of supplying oxygen to the pilot and passengers was used to some extent by the Germans during the World War.

ONE disadvantage of the methods of supplying oxygen explained above is that the user is not relieved of the severe physical stress of being subjected to such

(Continued on page 32)

THE GERMAN AIR INDUSTRY



A German war plane—A Junker armored two-seater.

THE one hundred and ten ex-military machines left to Germany formed the nucleus of her post-war air fleet. To adapt them to their new purposes they were more or less skillfully converted into commercial vehicles. Soon, however, it was found that they were absolutely useless owing to the unremunerative principles on which they were constructed, and it was decided gradually to eliminate them from the service, and to use them merely as stopgaps. Remunerativeness had not been aimed at in the construction of military airplanes; all that mattered was that they should possess the maximum capacity for rising and moving about in all directions. For commercial machines on the other hand such factors as economic working and maximum carrying capacity have also to be taken into account.

The normal progress of German civilian flying has been enormously retarded by the unfortunate economic conditions ruling throughout the country, and by the special restrictions imposed by the Versailles Treaty and the London ultimatum, which were aggravated by the interpretation of the terms published on May 5, 1922. The later regulations go far beyond the intentions of the original Versailles Treaty, and their effect has been to subject the progress of peaceful German flying to such a network of prohibitions that the establishment of

normal relations with the flying organizations of the surrounding countries has been made immensely difficult, if not quite impossible.

Owing to these circumstances most of the companies started after the war to take up civilian flying were either wound up after a short time of existence or amalgamated with others, with the result that all the services are now concentrated in the hands of two concerns, namely the Deutsche Aero Lloyd A. G., and the Junkers Luftverkehr. All German companies belong to one or other of these two groups. Even this amalgamation has not made it possible to carry on flying services during the summer months on a modest scale with more than a fair amount of regularity.

If, therefore, the German air services lag behind those of other European companies in their regularity and the quality of their machines, this is exclusively due to Germany's general economic plight and to the special handicaps arising from the Treaties. The government cannot take in hand these services itself; it must confine itself to improving the financial position of the privately-owned companies by some paltry grants-in-aid and subsidies. The money spent for this purpose if converted from paper marks into some stable currency is

ridiculously inadequate compared with what is done everywhere else.

Owing to the unfavorable conditions ruling in Germany the construction of airplane engines has not kept pace with developments abroad, and practically no new designs have been brought about. The only improving the aerodynamic properties of the flying machines, but the builders, Messrs. Siemens, only supply a limited number, and only at long intervals. It still remains to be seen whether the vertical engine with the new type of radiator constructed by Professor Junkers will stand the test of experience. The other experimental engines for small machines are not of much importance.

Two things are needed to stimulate the Industry to greater activity: firstly, the necessary funds, and secondly, sufficient elbow-room for its unimpeded development. Constructors have either abandoned their new designs altogether because they could not see a chance of translating them into practice, or else they have gone abroad, e.g., to Russia, the Scandinavian countries, and Italy, where they are not subject to such restrictions.

THE interest taken in flying being now as great as ever, many enthusiasts have turned their attention towards the problem of flying without motors. This will never be an end in itself, but only a means of improving the aerodynamic properties of the flying machine and of training pilots. It will also enable sections of the population to indulge in a new kind of sport. The flights in the Rhon district have shown a general improvement in the machines of this class. Attempts are made to standardize the various types used for experimental purposes and to adapt them to that of the Hannover and Darmstadt machine which proved so successful. The number of persons now engaged in this sport has considerably increased.

The science of aviation is struggling with unparalleled difficulties in Germany since it is handicapped by the want of funds necessary to carry on scientific research, which the government, owing to its own financial straits, is unable to supply.

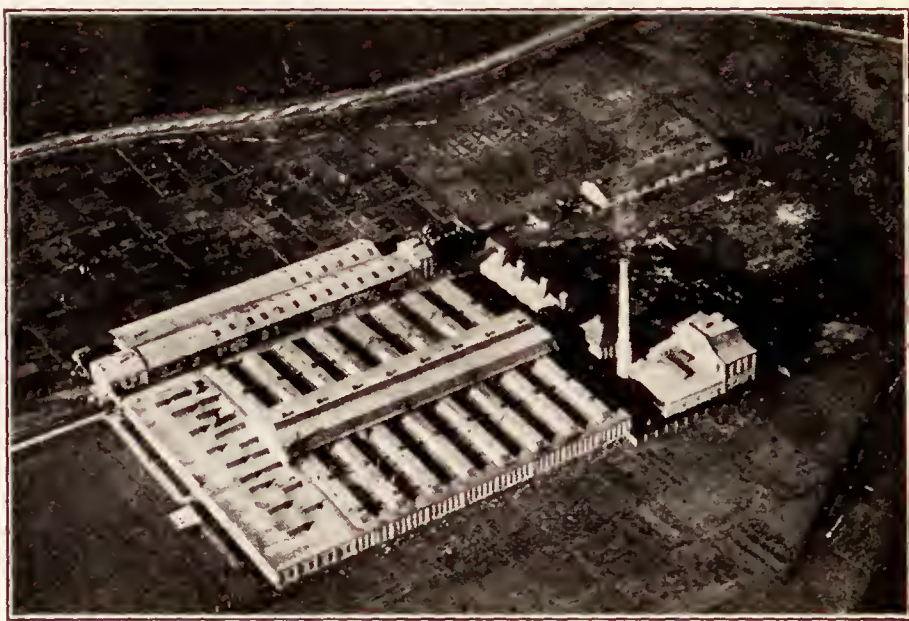
A subject completely neglected in Germany since the armistice is the training of a new generation of aviators, on which not one paper mark has been spent since then. The companies are entirely dependent on the pilots trained during the war.

One of the most important tasks in connection with aviation is the provision that has to be made for a sufficient ground organization. The safety of the flying services can be immensely enhanced by the existence of good aerodromes and intermediate landing places and by the establishment of efficient signalling and news services. The necessary arrangements in this respect

have hitherto been made by local bodies, although it is really indispensable that the government should take up this matter itself.

BRITISH Civil Aviation interests as represented by Daimler Hire Ltd., have been permitted by the German government to send their machines across German territory on the London-Hamburg-Berlin route, including such as according to the definitions published on May 5, 1922, must be classified as military machines, the use of which not even Germany herself is allowed within her own frontiers.

This arrangement may prove of far-reaching importance in the future, although the agreement thus arrived at between the two governments has not taken the shape



An aerial view of the Junkers Airplane Factory in Germany.

of an International Treaty. The German government is anxious to show that it does not intend to raise any obstacles to the progress of civilian flying enterprise.

The joint working of the route has so far been effected without any hitch, and to the mutual satisfaction of both parties. All sections in Germany interested in flying matters hope that this first step may be followed by others of a similar kind, and much regret is expressed everywhere that German aviation, owing to the obstacles enumerated above, is prohibited from showing what it can do on that international highway.

The attitude taken up towards the governments of France, Belgium, and Poland is entirely different. The reasons are not far to seek. France, however, has tried to force Germany to permit the passage of her airplanes across German territory. The practical outcome may be seen on the route from Paris and Strassburg to the Balkan States. The service indeed is in the hands of the Compagnie Franco-Roumaine; but there can be no doubt that in this case we have to deal with a purely military and political undertaking. This becomes at once evident when the small number of passengers carried and the

(Continued on page 26)

THE CRUISE OF THE AGE

AROUND THE WORLD BY AIRPLANE

THE ANCIENT AND MODERN MAGELLAN



Fernando Magellan



Major Frederick L. Martin

ON our long journey down through the ages we pass in review many notable men, men whose names were destined to acquire such fame that even old Father Time, in whose bosom so many great and notable men and women slumber unknown, has been constrained to yield to immortality. Not the least among the immortals is Fernando Magellan, to whom we assign the honor of being the first to circumnavigate the globe. Tradition, fable, and legend, always ready to detract from the fame of a discoverer by a story of a prior discovery years before, remain silent when confronted with the story of Magellan and his stupendous journey.

Magellan, a Portuguese sailor, at the age of twenty-four volunteered to serve in a great armada on an attempt to find an opening through the newly discovered western continents to India. Some years later when the adventurous youth laid before the King of Portugal his project of exploration, he was "dismissed with a frown," which led Magellan to quit his country with outspoken disgust and put his plans before Charles V. of Spain. Happily, the young king received the scheme warmly and orders were given to prepare vessels for the great undertaking.

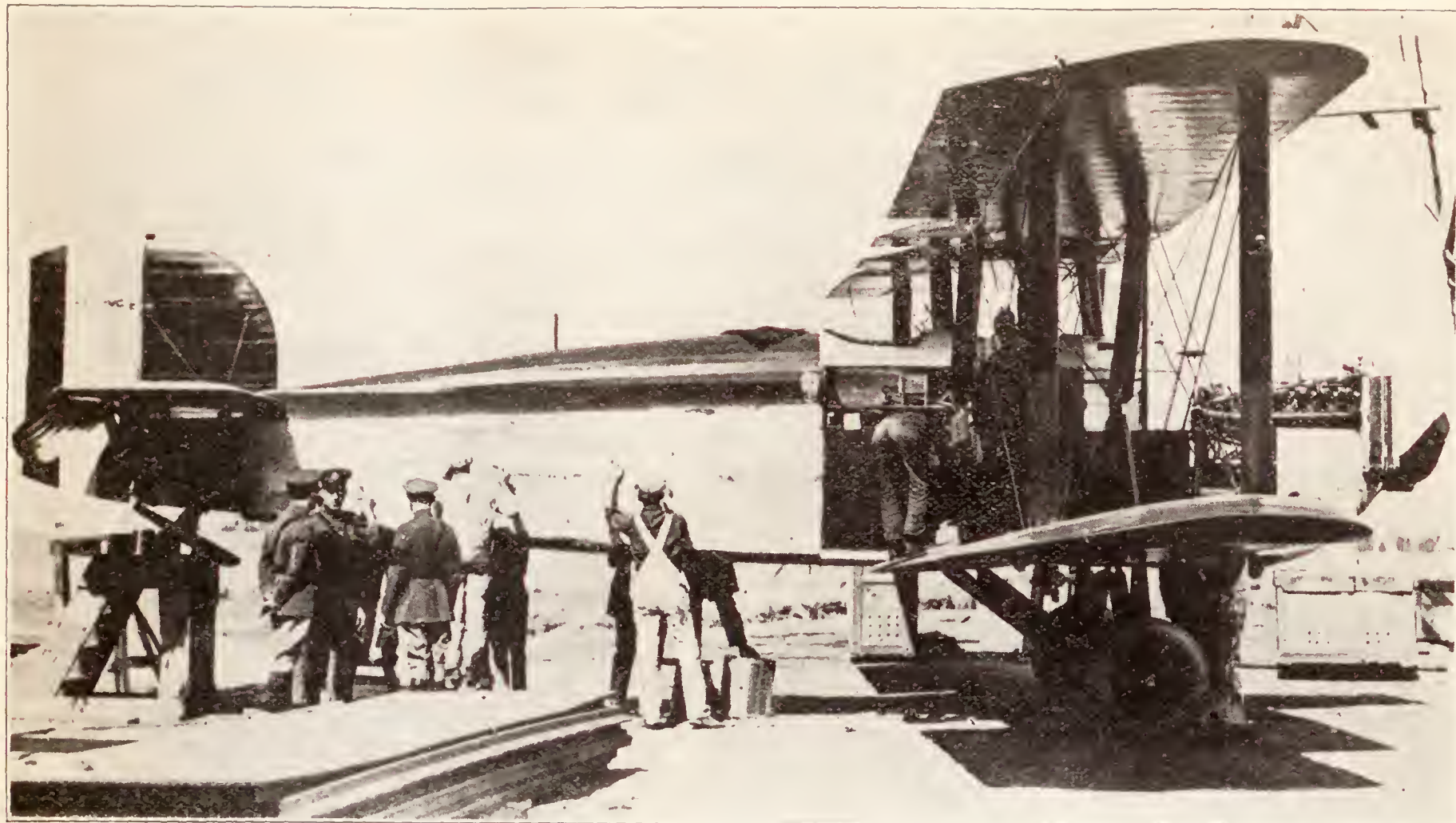
At length, after much delay, on September 20, 1519, the voyage was started, from St. Lucar, just below Seville. There were five vessels in the fleet.

Some four hundred years have passed since this little

fleet of five small ships spread their sails and headed into that vast and yet uncharted sea. Magellan and his crews, mostly Spaniards, inured to dangers of all kinds, could imagine nothing then which should deter them from finding the much-sought-for opening between the western land barrier. The ships were all less than 120 tons, their nautical instruments consisted of six wooden quadrants, one wooden astrolabe, a planisphere, six metal astrolabes, hour glasses, compasses, and compass-needles.

It is familiar history to all of us how one vessel after the other of this little band was diminished. First, the smaller advance vessel, the *Santiago*, was shattered on the rocks near Port St. Julian off the South American Coast, soon after the *San Antonio* mutined and turned back to Spain. With provisions running low, disease running rife among the crews, Magellan persisted in his resolve to push on. Finding the narrow but deep channel of the southern strait, he sailed on into the broad expanse of the mighty western ocean, the peaceful aspect of whose unknown waters led the explorer to christen it the Pacific, or peaceful sea.

With starving crew, which ate the ox hides of the ships' mainyard rigging and the rats which infested the holds of the vessels, Magellan, steadfastly and inflexibly keeping his course, like Columbus, to the west, finally crossed the broad expanse of the mighty unknown sea and on March 6 reached the Ladrone, or "Robber" Islands. Ten days later the Philippines were reached. It was here while establishing relations with the savages



International Newsreel Photo

The fourth World Cruiser of the circumnavigation fleet was delivered too late to take off with the group of three which left Los Angeles a few days ago on its first lap of the 30,000 mile journey. Lieutenants Erik Nelson and Jack Harding, pilot and mechanic of the belated plane are shown here impatiently watching the workmen of the Douglas Airplane Company of Santa Monica, California, put the finishing touches on the giant ship before the word Go! Ship No. 4 aims to catch the main group at Seattle, Wash.

that Magellan fell mortally wounded in a pitched battle between the crews and the wild natives.

In quitting the horrible scene another vessel, the *Conception*, was found so faulty that her stores were transhipped and she was burned. The two remaining

through the passages of the Indian Ocean, dropped anchor off Seville, September 8, 1522, two years, nine months, and eighteen days from the date of departure.

Such, then, is a glimpse of the voyage which deservedly ranks among the greatest that have ever been accomplished—a voyage without parallel in the previous history of mankind.

* * * * *



Lieut. Erik H. Nelson

vessels, the *Trinidad* and the *Victoria*, continued their course among the islands of Borneo until at length the Moluccas was reached. With a rich store of nutmegs, cloves, cinnamon, mace, and other tropical produce, the vessels made on, but the *Trinidad* soon became so leaky that to continue the journey was deemed useless. So the lone vessel *Victoria* sailed on with her valuable cargo and after an adventuresome but successful voyage

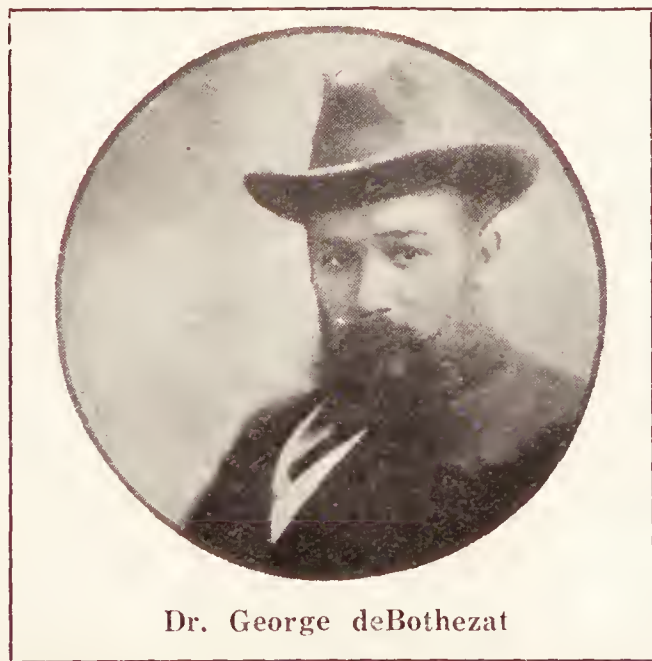


Lieut. Leigh Wade

Today we are about to observe the beginning of another great journey around the earth. Near the western coast of the United States there is assembled a crew of men waiting anxiously for their ships to be completed

(Continued on Page 24)

The Truth About the McCook Field Helicopter



Dr. George deBothezat

WHEN the fact became known that experimenting on the greatly celebrated deBothezat Helicopter, built at McCook Field, was ordered abandoned by the Chief of Air Service, the public at large and Dayton, especially, had its expectations greatly chagrined.

So much favorable comment had emanated from the Dayton, Ohio, air post as a result of initial trial flights of the new craft that the press heralded the invention as marking a new epoch in the annals of human flight.

Reports concerning the first trials were so exaggerated and distorted by the enthusiasm of the popular mind that it is true citizens of Dayton turned their gaze skyward at each strange sound expecting to see the helicopter soaring majestically overhead.

The lay mind can be excused from expecting too much from helicopters. The general principles of these direct lift machines appear so simple and the idea so logical that the novice wonders why aeronautical engineers did not build one of these sort of flying machines in the first place.

It will be remembered that the first inspiration of the Wright Brothers was born through the gift of a toy "helicopter" flying top by their father away back in their early childhood. The fascination of watching the top lift and soar upward through the power of the spinning verticle axis propeller left a lasting impression upon their youthful minds, but later they found that their efforts to make a larger model of the top fly were futile. The larger they built the top the less it flew and so their first discovery of an aerodynamic law was made.

However, the greater majority of the early experimenters in aircraft succumbed to the lure of the single axis helicopter type of flying machine, and thus, like the moths about the flame, they fluttered and fell one after the other.

But now many noteworthy aeronautical engineers are turning their attention again to the helicopter and with recent encouraging demonstrations of the Pescara helicopter in France and the Berliner helicopter in the United States we can at least lend a serious ear to even the slightest improvements and progress.

When the deBothezat helicopter didn't turn out quite as well as expected and it was found necessary to spend still more money in working out new problems, sentiment suddenly changed: the "great Russian Scientist" immediately became a fraud. His numerous other contributions to the development of aeronautics were discounted and he now must take up a position of exile, to get away from the ridicule of the public.

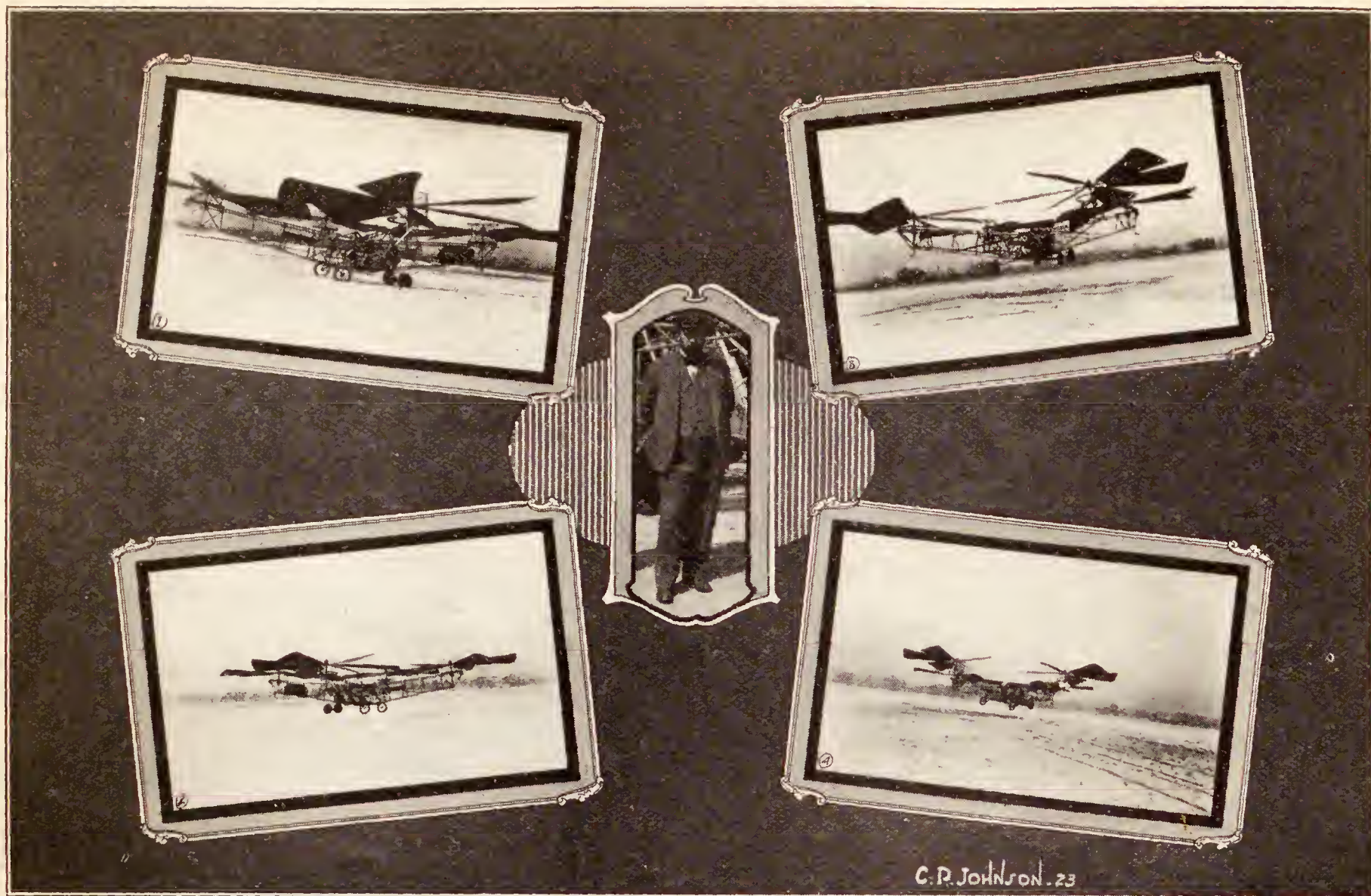
When it was announced later that the machine on which the United States Government has spent over \$200,000 to develop had become virtually a "relie" and would be removed to the Engineering Division Technical Museum at McCook Field, the press both in this country and abroad berated the foolishness of our Government in spending such large sums on the "contraption."

Word now comes to the effect that had Dr. deBothezat been able to employ a more capable works manager in perfecting his machine the chances point to a far more successful performance. In other words, the principles of the machine are said to be the most promising of any in existence and display the unusual ability of the



Major T. H. Bane

inventor in solving those intricate problems of aerodynamics. It is believed by many that there is no other figure in aviation circles so well versed upon theoretical points in the phases of aircraft construction than deBothezat. If he fails in the building of a successful helicopter, the way looks dark for some years to come for this type of machine, is the popular expression of many of our foremost engineers.



Four interesting views of the deBothezat helicopter depicting stages in one of its most successful flights. Dr. deBothezat is shown (center) in one of his favorite poses.

The contract entered into between Dr. deBothezat and the United States Government may be interesting to many who have not been previously informed as to its terms. This contract was No. 375, dated June 1, 1921, and by its terms the inventor was to furnish drawings and data and to design, construct, and supervise flight tests of the helicopter. The Government was to furnish supplies, materials, equipment, workmen, and working space. As a compensation, the inventor was to be paid \$5,000 for the complete first drawings and sketches; \$4,800 for the detail design and construction; \$2,500 if the machine should rise from the ground on its own power to a height of twenty feet; \$2,500 additional if the machine should rise three hundred feet; \$7,500 additional if it should rise three hundred feet and return safely with a descending speed of less than fifteen feet per second; \$7,500 additional if it should rise three hundred feet, returning safely at a descending speed less than fifteen feet per second, with the engine completely throttled. The article was to be completed and ready for test by January 1, 1922, this date later being changed to May 31, 1922. By the terms of the contract the inventor granted to the Government the license under any developments which were devised in connection with the performance of the contract.

The basic principle was the positioning of the lifting screws on axes which were inwardly and upwardly inclined so as to produce complete inherent stability by giving in effect a dihedral angle to the planes of rotation of these lifting screws. These lifting screws are comprised of six large blades each, the total outside diameter of each lifting screw being 26 feet and each blade having a width near its tip of 5 feet. The overall length of the machine is 65 feet. The blades are each adjustable about their own longitudinal axes so that their

pitch may be varied and a steering mechanism was devised so that the pitch of all of the blades could be changed simultaneously or, if desired, so that the blades of one lifting screw could be changed in an opposite sense to the change of its diametrically opposite lifting screw.

The central frame member supports a 9-cylinder 200 h. p. LeRhône rotary motor and four outwardly and upwardly extending structural arms which are attached to the central frame member and which are formed of aluminum and steel tubing. One of these arms contains the pilot's seat and each supports one of the lifting screws as its outer end.

The motor drives a main shaft and the four jack shafts, to each of which is connected a turret driven through ring and center gearing. The motor also drives two four-bladed propellers, of the reversible pitch type, one being rotated at each side of the pilot and facing forwardly at the outer ends of the supporting arms so as to propel the machine horizontally.

In order to reverse the pitch of the blades of the main lifting screws, a hollow shaft is fixed to the frame and the end extends upwardly to a floating bearing which acts as a hub for hollow shaft. A reversing and adjusting sleeve and levers are adapted to be operated vertically by movement of shaft mounted within the adjusting sleeve in order to adjust the blade angle. The shaft is vertically operated by means of spiral threads and a spiral threaded member, threads being operated by a sprocket to set the pitch of all the propeller blades simultaneously in the same direction and the threaded member which is operated by a lever for lateral stability by relative variation of the blades of the opposite lifting screws.

(Continued on page 23)

PHILADELPHIA ALIVE TO AVIATION

By C. T. Ludington

ALMOST a year ago a group of men who felt that aviation activities in Philadelphia, as well as the countrywide projects of the National Aeronautic Association, would be benefitted by the formation of a local chapter, met at a luncheon, with a representative of the Membership Committee of the Association. Ways



C. T. Ludington

and means were discussed and plans made to bring in as great a membership in as short a time as possible, in an attempt to obtain for Philadelphia the first charter to be issued for a local chapter.

The sledding at first was hard. Interest was not very great, and many did not grasp the greater value of a chapter tied to a strong national organization over a purely local club. Gradually, however, the idea of a strong headquarters which could bring about co-operation between chapters in different parts of the country to the end that proper Federal legislation for commercial flying and proper public and government interest in military aviation might be obtained, began to take hold. Enthusiasm among the local N. A. A. members became very great and was not damped when the news came that New York had secured Chapter No. 1, for which Philadelphia had been trying. Talks were given by the members at business clubs. Through the efforts of Mr. Hollingshead N. Taylor, an aviation dinner, at which General Mitchell was the principal speaker, was arranged by the Chamber of Commerce. Later the important City Club was addressed by Admiral Fullam, and members of the N. A. A. successfully opposed certain legislation at Harrisburg. The result of these activities was increased publicity and understanding of the situa-

tion. Philadelphia is not a city whose citizens can easily be rushed into new projects, and our efforts might be laughed at by many of our mid-western friends, but when our minimum was reached and passed we felt that we had secured an enthusiastic group who would make up in hard work and genuine interest what they lacked in numbers.

On the day that the hundredth member was enrolled, the charter application was rushed to Pittsburgh for the signature of Mr. L. F. Sevier, Governor at that time of the Third District. It was then flown to Baltimore by Robert P. Hewitt and Samuel Brenner in a Sport Farman. At Baltimore it was signed by Captain R. S. Walters, the other Governor of the District. It was then carried on to Washington and turned over to headquarters. An interesting incident of this trip was that on the return flight the gasoline supply ran low, necessi-



Hollingshead N. Taylor

tating refueling. No landing field being available, near a source of supply, Hewitt brought the tiny machine to rest very easily in a side street of a small New Jersey town, filled the tank, and casually proceeded on his way.

A few days later the members of the soon-to-be Philadelphia Chapter, in conjunction with the Aero Club of Pennsylvania, held a successful Aerial Rally at the Pine Valley Flying Club. A number of visiting pilots flew to the Rally, including the members of the 304th Observation Squadron, 79th Division, Maryland National Guard and were guests of the two organizations. Two flying contests were held. An altitude contest for one year's possession of the fine plaque presented by Dr.

Thomas E. Eldridge, the winner being the pilot who should attain the greatest height in 10 minutes, was won by Captain E. D. Hearne, in an SE-5. A Spot Landing Contest was won by Robert P. Hewitt in a Sport Farman. Members of the Baltimore Squadron captured first and second prizes in a rifle-shooting contest.

Before interest had time to die down an organization dinner for the Philadelphia Chapter was held, at which Lieutenants Macready and Kelly, Vice-President B. H. Mulvihill, Conway W. Cooke, and C. D. Tinker of the N. A. A. were the principal guests and speakers.

During the summer considerable flying took place from Pine Valley and a small meet was held at Media.

A number of members of the Philadelphia Chapter attended the Convention at St. Louis. Two of these, Robert P. Hewitt and C. T. Ludington, flew out in the latter's Sport Farman. They were entered in the "On to St. Louis Race" and would probably have placed nicely but for a broken crankshaft a hundred and forty miles east of their goal. Hewitt represented the Chapter in the race for two-seaters under 90 H.P., but the little 60 H.P. Farman was no match for such ships as the Hartzell Special and Casey Jones Oriole and would have finished last if Lawrence Sperry had not suffered from engine trouble.

The Philadelphia Chapter of the N. A. A. has been active in the matter of securing a landing field in Philadelphia. The story is too long to tell here. Suffice it to say that every possible obstacle has been in the way and that these obstacles are being overcome. We should shortly have a municipal field worthy of the name.

Probably in no other city is there such harmony between a number of aviation organizations as there is in Philadelphia. The senior organization, the Aero Club of Pennsylvania, is becoming more and more of a club run for, and by, fliers. The Philadelphia Chapter, with lower dues and a much larger membership, has in it many fliers but also many whose connections with flying are not so close. It is more of a propaganda organization, to create interest and to work on either national or local affairs. The Aviation Committee of the Chamber of Commerce furnishes contact with men and organizations who would not otherwise be reached by the Club and the Chapter, and of course is very effective in dealings with the City Government. Thus there is no conflict of interest or activities and consequently no jealousy.

An interesting feature of the Philadelphia Chapter is the Episcopal Academy "Branch." This consists of a group of thirty students of this school who are interested in aviation. They make numerous trips to the Naval Aircraft Factory, Pine Valley, and Lakehurst, and are a most important unit in local aviation circles. Their president is Alfred J. Ostheimer, III.

During the past winter the Chapter, with the Aero Club, gave a large dinner on the occasion of the twentieth anniversary of the Wright Brothers' first flight. Recently a dinner to the crew of the *Shenandoah* was given by

the Aero Club and the Engineers' Club. A Chamber of Commerce dinner is now being arranged in honor of the *Shenandoah's* crew.

Plans of the Chapter for the next few months include another Aerial Rally at Pine Valley, a membership campaign, and possibly some sort of a light plane competition.

The officers of the Chapter are: Hollingshead N. Taylor, President; Samuel B. Eckert, Vice-President; C. T. Ludington, Secretary and Treasurer.

What Miami Is Doing

By Bert Klopfer

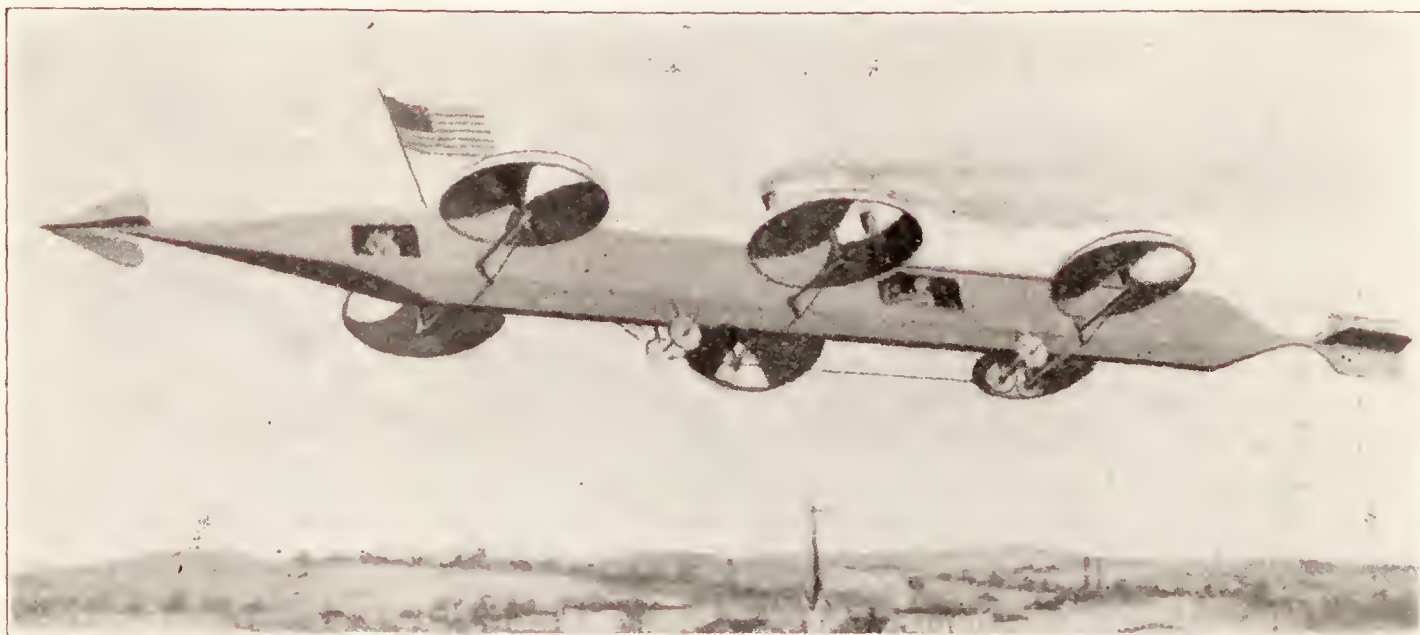
Following the great water regatta and seaplane contest, which gave to Lieut. V. F. Grant, United States Navy, the \$5,000 Curtiss marine trophy for sending his Vought seaplane through space at an official average of 116.1 miles per hour, Miami, Florida, makes the announcement that she will form a chapter of the National Aeronautic Association.

President E. G. Sewell and Secretary Fred L. Weede, of the Chamber of Commerce, burdened by the weight of regatta details, of harbor and channel improvements, of legislative problems, and of a thousand and two things incidental to the general boosting of Miami, have held back systematic efforts to form a chapter. The regatta out of the way, each says that a minimum membership of 300 in Miami is the immediate goal to be tackled.

In the meantime, the Miami Rotary Club is quietly canvassing its members for enrollment in the N. A. A. The Kiwanis and Exchange and Civitan Clubs are expected to do likewise, and out of these efforts it is confidently expected will issue an organization made up of aviation enthusiasts who live in and around Miami and not drawing upon the thousands of wealthy sport patrons who spend the winter or a part of it in the palm-decked city of June balm.

From the following members of the general committee having in charge the arrangements for the annual water regatta will be drawn a central executive committee to form the nucleus of the Miami Chapter of the National Aeronautic Association; E. G. Sewell, R. V. Atkisson, Crate D. Bowen, M. O. Fullam, John C. Gramling, Norman W. Graves, C. D. Leffler, H. H. Mase, John B. Orr, George K. Palmer, J. S. Rainey, F. B. Stoneman, B. B. Tatum, W. N. Urney, W. W. Culbertson, Ross A. Reeder, I. E. Schilling, Clifford A. Storm, E. B. Douglas, Joseph P. Greaves, C. S. Krom, Glenn Curtiss, George E. Merriek, John B. Reilly, Mayor E. C. Romph, Frank Railey, R. B. Burdine, W. S. Kenney, C. H. Reeder, John B. Shutts, James H. Gilman, Marshall Price, F. G. W. Claussen, J. I. Wilson, J. E. Lummus, Mayor L. F. Snedigar of Miami Beach; T. J. Pancoast, George W. Moore, Huston Wyeth, M. G. Heim, J. K. Dorn, John Carlisle, Paul R. Scott, R. J. Marshburn, Lon Worth Crow, John McCarthy, Robert Ralston, H. S. Duncan, W. H. Sturmer, J. A. Raich, and Hamilton Hopkins.

THE GABBHEY AIRSHIP CO., INC.



THE PROPOSED AIRSHIP OF THE GABBHEY AIRSHIP CO., INC.

SOME years before the Wright Brothers started experimenting with their motor-powered glider or "aeroplane" on the old Simms prairie north of Dayton, Ohio, there appears to have been an era of intense effort toward solving the art of flying. Dozens of would-be inventors, enamored of the fantastic pictures of flying machines that appeared from time to time in the press of this period, could not resist the temptation to try their hand at solving the mystery of human flight, and thereby become famous. Helicopters were much in evidence, while "ornithopters" (machines supported in flight by wings that flapped like those of a bird) were also a popular favorite.

We need not mention now that the dreams of these early inventors were shattered. Possibly the most successful of these aeronautical pioneers of the U. S. was Professor Langley, who, assisted by Charles Manley, designed and built an aeroplane driven by a steam engine. Congress was sufficiently impressed with the machine to grant Prof. Langley a considerable appropriation to aid him in his experiments. The first flight in this machine was made May 6, 1896, near Washington, D. C., but through a poor method of launching it fell into the Potomac River. This early machine now hangs as a relic in the Smithsonian Institute.

It was about a year after this attempted flight of the Langley aeroplane that Albert W. Gabbey, of Rossville, Kansas, perfected a model of a huge airship, which was to be driven by a steam engine. A few weeks ago, while rummaging through the dusty brie-a-brac of the attic in his home, an official of the Engineering Division, Air Service, McCook Field, discovered a packet of literature concerning the proposed construction program of "The Gabbey Airship Company, Inc." It recalled to him the incident of over twenty years ago, when his father, like

possibly dozens of other citizens of Dayton and community, were caught by the romantic dream pictured by the inventor, and signed his name on the dotted line for a liberal amount of stock in this great enterprise which was to usher in a new era in the history of human advancement.

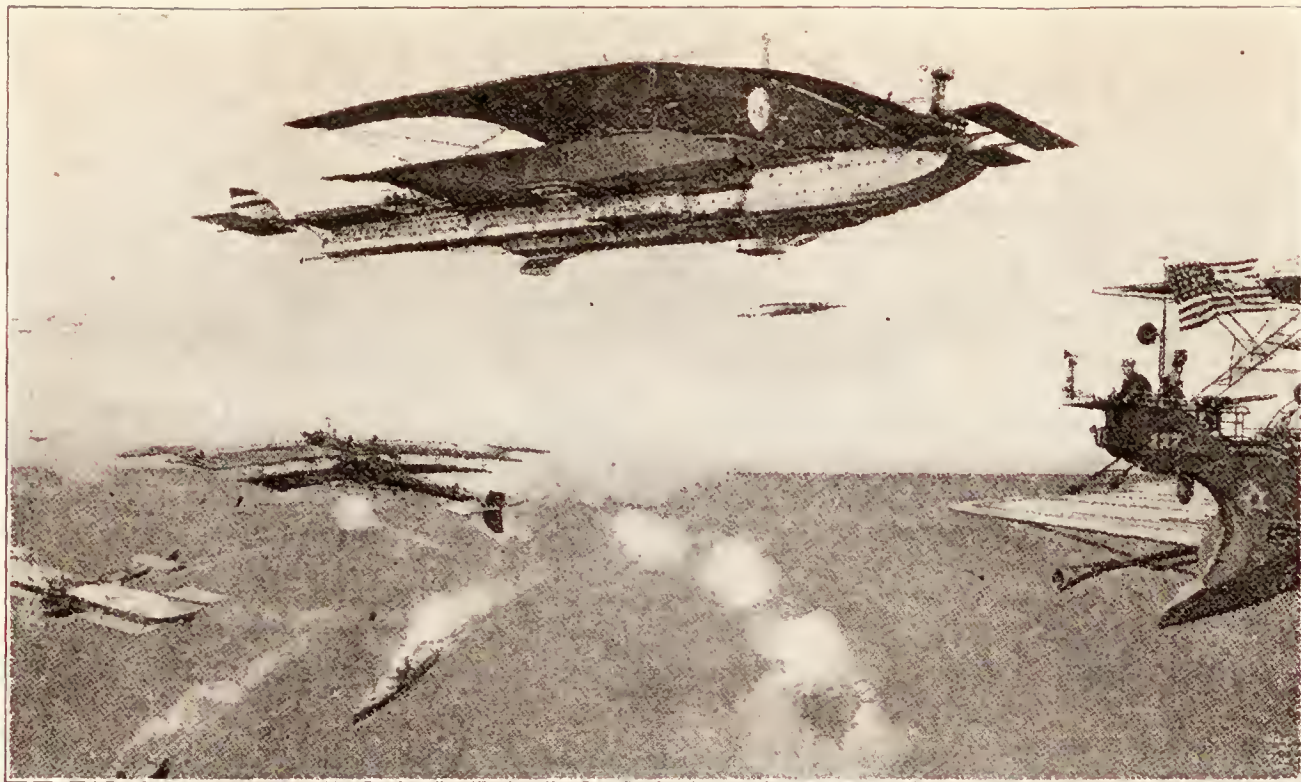
We do not believe "The Gabbey Airship Company, Inc.," was attempting to institute a fraudulent scheme in inaugurating their stock selling campaign. The inventor no doubt had every confidence that the machine would work, although perhaps the details of operation were for the greater part but mirages of enthusiasm and imagination.

However, the arguments offered seem so vague to us now, and the ideas entertained at that time by the organization so absurd, that we believe our readers will be both amused and interested in reading the contents of the "ancient pamphlet." We reprint it verbatim.

The above engraving represents a working model, three feet in length, which we have recently constructed in accordance with our invention for aerial navigation. This model of our invention for navigating the air works satisfactorily, and it is the judgment of those who have examined and tested it, if the principle is applied to a car of sufficient size to be of practical utility, it would rapidly and successfully accomplish the purpose.

As you are interested in the subject of aerial navigation we trust that a short communication upon the subject would be thoughtfully considered.

Since the invention of the balloon by Montgolfier, in the year 1783, many unsuccessful attempts have been made to propel the balloon and thereby navigate air. More recently the "aeroplane," a large spread of canvas, somewhat elevated in front, kite fashion, and propelled by an engine, has been, both in Europe and America, largely but as yet unsuccessfully experimented upon. In attempting aerial navigation upon this line, however, we are met with several prom-



The fellow who dreamed of constructing a huge monster after this type apparently did not live to see one placed in actual operation. However, with the advent of the Shenandoah and the Parling Bomber he might justly lay claim to the old axiom, "I told you so."

inent difficulties. A canvas sufficiently large to carry the frame, an engine, fuel, a person or persons to control the same, together with all the other essentials, would require at all times a favorable condition of the atmosphere. Aeroplanes can best be propelled when worked at a small angle or incline, provided the speed is sufficient, and we have been informed by experimenters that an incline of one to eight has been found to give the best results. An aeroplane, which is the system upon which nearly all the recent efforts at aerial navigation have been made, placed at an incline of one to eight, and required to support a weight of one pound per square foot (knowing the resistance to be obtained from the atmosphere), requires a velocity of nearly forty miles per hour to sustain the same; consequently starting and alighting would be often very unsatisfactory. Again, an aeroplane having a spread of canvas so large as to require a supporting power of less than one pound per square foot becomes unwieldy, except in a very favorable atmospheric condition. The hawk and other sailing birds, having a large spread of wing in proportion to the weight of the body, navigate the air very successfully when the breeze is favorable, but in a high wind or gale they get under cover, whilst the quail, the humming bird, the pheasant, and others, having proportionately small wings, use their wings rapidly, and in their flight appear to ignore the wind and storm.

We have in the past taken pains to weigh a variety of birds, measure their extended wing surface, and ascertain as to the weight per square foot of wing that each is required to support.

When mankind attempts flight it is well, first, to learn what we can from nature.

The foregoing remarks may be uninteresting and have been written as a preface to a description of the manner in which we derive, in our invention, a supporting and propelling power from the atmosphere.

Quite a number of engines have been made at various times, in different places, with a view of propelling a balloon or an aeroplane and sufficient experiments have been made to show that an engine can be so constructed as to develop a horse power with less than every five pounds of its weight. So far as being able to produce the necessary power for aerial navigation is concerned, there is hardly any longer a doubt and we believe this essential part has passed successfully the experimental stage.

The next important question in an effort of this nature is: What is the best and most successful means of obtaining a supporting and propelling resistance from the atmosphere?

First, we wish to say that whilst our atmosphere is very elastic or volatile, a column of it a foot square weighs nearly a ton. This air, when in motion at a rate of seventeen miles per hour, produces a pressure of one and one-half pounds per square foot. At a velocity of twenty-two miles per hour, the pressure is two and one-half pounds per square foot, and at thirty miles per hour, about five pounds per square foot, thus increasing in pressure more rapidly than the speed of the wind is increased.

From this it is apparent that a small surface moved rapidly against the atmosphere is productive of better and more satisfactory results, when aerial navigation is the object, than a large surface moved more slowly.

(Continued on page 28)

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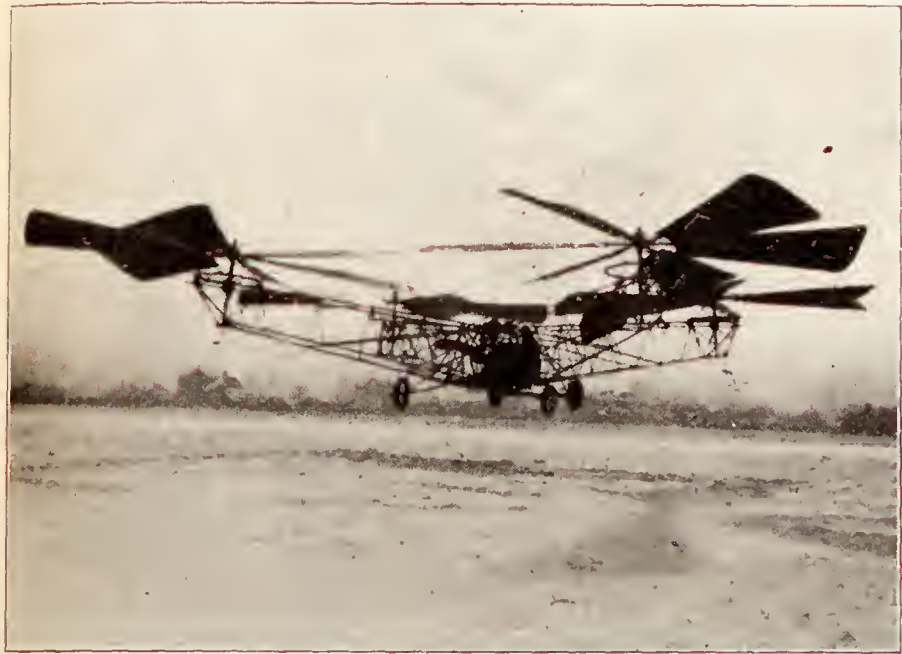
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(Continued from page 18)

In simultaneously increasing or decreasing the pitch of all of the lifting blades, the hand-wheel is turned which moves sprocket, driving chain, which passes over auxiliary pulleys to a master pulley from which pass controls to the sprocket of the four lifting screws. From the stick control a series of controls to rotate to levers to decrease the pitch of the blades of one lifting screw while increasing the pitch of the opposing one. Although the control is of the joy stick type, the machine as actually constructed, is provided with a wheel



The Helicopter in Flight.

of the Deperdussin type for effecting this control. The directional propellers are also of variable pitch in order to turn the machine about its vertical axis, the pitch being varied by means of levers, either being operable independently of the other, by the operator's feet against spring pressure. A plurality of lifting screws, the pitch of the blades thereof being adjustable and reversible by a handwheel are mounted vertically over the motor and are provided to break the downward descent of the vehicle and may also be utilized to augment the lifting effect of the main lifting propellers when ascending.

During descent, the pitch of the blades of the lifting screws is simultaneously reversed, should the motor stop, and under such a condition the blades may reach a high rotational velocity by wind-mill action, the propellers being rotated by this wind-mill action in the same direction as they were

originally rotating when driven by the motor. As the machine approaches the earth, the propellers are quickly reversed to their normal or lifting pitch and because of their fly-wheel action or momentum, they will continue their rotation in the same direction which will afford a breaking and cushioning effect on the downward movement of the machine.



World Wide Photo

TO INDUCE FOREIGN AVIATORS HERE

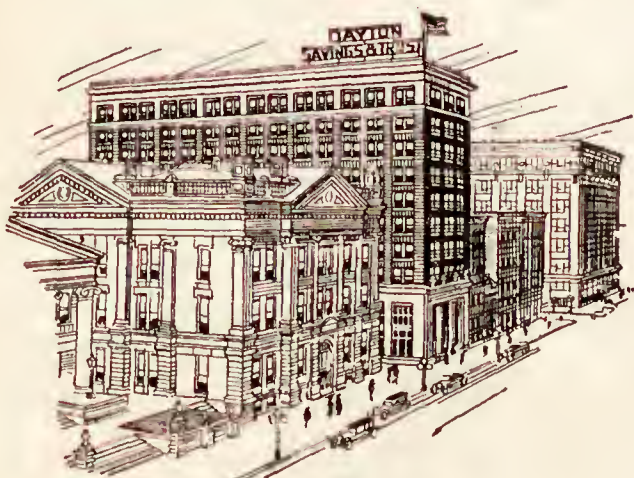
Mr. and Mrs. F. B. Patterson were passengers on the "Berengaira," sailing in middle February. Mr. Patterson is going abroad to induce foreign aviators to bring their planes here for the annual Pulitzer Aerial Derby to be held in Dayton next fall. He is President of The National Cash Register Co., and Chairman of the National Aeronautical Association.

Persia Makes Aircraft Purchase

There recently arrived at Bushire six airplanes bought from French manufacturers by the Persian government. Several French pilots accompanied the airplanes, these flyers to later act as instructors to the Persian Army.

Argentine Makes Plane Record

An Argentine aviator flying a Fokker C IV biplane on January 23, broke the world's altitude record carrying 1,100 pounds to a height of 6,485 meters (21,227 feet). The record was accomplished at the city of La Plata.



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World Wide Photo

Lieut. Erik Nelson, engineer officer of the "Round the World" flight, pointing out the route to the Army Air Service planning board at a conference in Washington held with the Chief and members of the Training Division of the Air Service. Left to right: Captain St. Clair Streett, Major W. C. Kilmer, Lieut. R. J. Brown, Col. J. R. Facht, Lieut. Erik Nelson, Capt. W. F. Wolandt, Capt. E. E. Adler, and Lieut. C. Bissell.

(Continued from page 16)

and equipped for the great journey. Like Magellan's fleet, this fleet is small, consisting of but four cruisers; like Magellan's sailors, these men who are selected to undertake the trip see nothing but romance and adventure and glorious success ahead of them. In the factory at Santa Monica, California, where the ships were rushed to completion to meet the scheduled date of departure on March 15, these men watched with intense interest, and perhaps with a bit of impatience, the fitting of each part in its place. They longed to be off on the "great uncharted sea;" the same lure of adventure which spurred on those early navigators still lives in the minds of these modern explorers who will endeavor to chart a new path through that infinite sea of the heavens. that those who journey after might follow without fear

or dread of impending disaster.

We, of course, have reference to the round-the-world flight of U. S. Air Service aviators.

By the time our readers follow these lines, the four World Cruisers, built especially for the world encircling trip by the Douglas Airplane Company, of Santa Monica, California, will no doubt have been completed and the journey started.

The "modern Magellan" who has been selected by the Chief of Air Service to command the air fleet is Major Frederick L. Martin, who was relieved of the command of the Air Service Technical School at Chanute Field, Rantoul, Illinois, to assume command of the great flight. The other officers who have been designated to take part in the trip are: Lieutenants Lowell H. Smith, Erik H. Nelson, L. Wade, and J. Harding, Jr.



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Lieut. Lowell H. Smith

Eight mechanics have lately completed a course of intensive training at Langley Field and from these eight men four will be selected as members of the crew to look after the planes.

We might well compare the difficulties and hazards of this twentieth century round-the-world cruise with

those of that historical voyage of over four centuries ago. The sea these modern navigators will traverse is as treacherous and full of unknown dangers as that which confronted the fleet of Magellan. Their craft, although stanch, strong, and as fine as any in existence for attempting such a flight, might be regarded as little more fitted for the grueling test of the 30,000-mile journey than were the small wooden sailing vessels of Magellan's fleet. Aerial transportation, although having made remarkable progress in the last ten years, is still in its infancy and thus this stupendous undertaking attracts us as the birth of a new era, a trail-blazing expedition that will open the channels of that vast aerial sea which yet remains to be utilized as a thoroughfare for commerce and social intercourse between the races of mankind.

The schedule of the spectacular world circumnavigating aerial journey is as follows:

Leave Los Angeles, Calif., March 15; arrive at Seattle, March 24; Prince Rupert, B. C., April 1; Chicago, April 11; Island of Attu, April 27; Calcutta, India, May 28; San Stefano, Turkey, June 29; London, July 1; Boston, August 2, and Washington, August 10.



Miss Idella Reussenzehn

Now Jack must sail away on a perilous journey while Dell, instead of pensively watching the horizon line of the dancing sea waves for her returning lover, must gaze among the clouds for a possible glimpse of her aerial rover.

THE ULTRA-MODERN ROMANCE

The old song, "When Jack Comes Home Again," is given a modern personification when the departure of the Round-the-World flyers severs the intimate friendship ties of "Jack and Dell," popular young folks of Dayton, Ohio, and McCook Field. Jack Harding, Jr., or Lieutenant Jack Harding, Jr., was recently called into active service from the Officers' Reserve Corps to accompany the group of U. S. Air Service aviators on the circumnavigating flight. The friendship of Dell and Jack is a familiar item in the everyday life of McCook Field, where they are seen together at every leisure moment.



Lieut. Jack Harding, Jr.



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(Continued from Page 14)

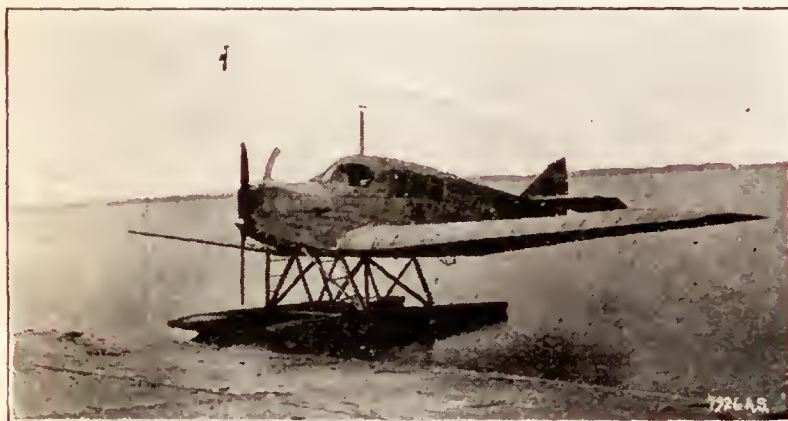


A Junkers Land Plane

unremunerativeness of the service are taken into account. The expenses of this route, for instance, are twenty-five times as great as the takings.

The German government looks upon the machines of this concern as military aeroplanes belonging to a foreign Power passing over Germany without a permit. Repeatedly these machines have been forced to make emergency landings on German territory. In such cases the pilots are allowed to proceed home but the machines are confiscated.

France has assumed rights exceeding those to which the Versailles Treaty entitles her, whereas she ignores the duties imposed upon her. The passage of aeroplanes



A Junkers Sea Plane

and airships across Germany will have to be regulated by mutual peaceful agreement on a legal basis; but before that can be done France will have to make real peace with Germany, and compensate her for the wrongs committed upon the numerous German citizens expelled from their homes and deprived of their property, and upon the imprisoned, the wounded, and the killed.

Another aspect of the problem is that the work of rendering assistance to a machine stranded on foreign soil presupposes the existence of good will and mutual confidence, and such confidence can neither be enforced nor obtained by fraudulent means. A successful issue of mankind's struggle against the elements—and against the air in particular—can only be expected if all concerned show a united front.

The relations between German civil aviation and the concerns of the remaining European countries, such as Russia, Denmark, Austria, Hungary, Sweden, Norway, Switzerland, Spain, and the Netherlands have never been anything but pleasant and profitable. Germany

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A Junkers Ice Plane

has always shown her readiness to co-operate with other countries, and it would be to the benefit of all nations if the exceptional treatment to which German aviation is exposed were to cease. The damage inflicted by the present position is not national but international.

The geographical situation of Germany in the very center of the European Continent is a fact which no argument can destroy, and for this reason her existence must be taken into account whenever questions affecting transcontinental flying are concerned. The possession of suitable bases on German territory is therefore of great importance to all nations interested in aviation.

(Courtesy of *The Aeroplane*, England)

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which worries us—
it’s the *ground!*’**

Formerly, exact knowledge of the country over which you were to travel was largely a question of convenience. Now it is often a matter of more vital importance.

Air travel has made positive the necessity that information as to the *ground* be accurate—for routes, location of landing fields, topography, distances and a myriad details. Air travel has thrown an unprecedented responsibility upon *maps*.

Officers of the U. S. Army Air Service use RAND McNALLY Maps in their record-breaking flights because of the *invariable accuracy* which has made the word “maps,” wherever heard, mean RAND McNALLY.

RAND McNALLY & COMPANY
Map Headquarters

Dept. C-89, 536 S. Clark Street, Chicago

(Continued from Page 22)

The supporting screws of my device are two bladed, each blade placed at an incline averaging one to eight—the incline slightly increasing from the front to the rear edge of the blade—and are revolved rapidly. They might be termed revolving aeroplanes or screw parachutes. The two blades forming each screw make on their under side a sort of concave disk.

A revolving aeroplane receives the same atmospheric resistance and is as easily propelled as an aeroplane moved in a direct line, and has the advantage of using a small surface at a high rate of speed. Each revolution of a screw is equivalent to a stroke of a bird's wing with the advantage on the side of the screw, that whilst the bird is giving to its wing a vertical and reciprocal motion the blades of these screws are moved with less power in a horizontal and rotary motion.

This form of airship has also the advantages of being able to rise or descend almost in a vertical direction—to stop and maintain itself in mid air.

The propelling device consists in those screws being so adjusted that they can be slightly inclined forward or backward from a vertical position at the will of the operator.

The rudders and their action, the movable ballast in the lower part of the car, the lighting and heating of this car, together with other requisites are matters of secondary consideration, but have all been nicely and satisfactorily arranged.

A car of this kind can be so formed and so compactly built that when in motion it will receive but little resistance from the atmosphere.

We are now preparing a working model of about sixteen feet in length and hope to have it completed before May 1, 1900.

The civilized world within the past few years has been pretty thoroughly aroused upon this subject of aerial navigation and a device that is a satisfactory solution of the problem would be highly attractive if exhibited in our larger cities, and at Paris the coming season.

The sewing machine, the electric telegraph, the locomotive, in a word, all our great and useful inventions, have had their infancy, their struggles, and disappointments and so has this, but with a conviction that the design is correct, the work shall be prosecuted.

Since maturing this invention we have submitted it to the examination of many intelligent gentlemen and with hardly an exception they pronounce the plan a correct one and believe for a large vessel would be a practical success.

Within the last few years we have been repeatedly asked questions regarding this invention, and as many of the same questions may occur to you, we will here try to answer a few of them.

First, it is often asked how large should a car of this kind be made so that it would be of military or commercial utility?

Like ocean vessels they might be made of various sizes, but to be of practical use an airship of this kind would have to be about 144 feet in length, six and one-half feet beam, or horizontal measurement at the center, and eight feet in height.

What would be the diameter and area of the screws?

Each sixteen and one-half feet and a total area of 1,280 square feet.

How large an engine would a car of this size require?

Between 700 and 800 pounds, capable of developing 150 horse power.

(Continued on page 30)

M

IF OUR CLOTHES DON'T MAKE
GOOD—WE WILL

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ZR-3, Sister to Shenandoah Near Completion

Reports from Friedrichshaven have it that the huge Zeppelin sister ship to the *USS Shenandoah* being built by the Germans for the U. S. Navy is almost ready. First trial flights were scheduled for the middle of March and if everything goes along well the great airship will within a few months start upon its journey to America across the Atlantic. The ZR-3 is to be delivered to Lakehurst, N. J., by the German crew where it will occupy part of the great hangar built to house the two airships.

An English aeronautical weekly suggests that the ZR-3 might be used as an emergency ship to go to the rescue of the *Shenandoah* should it encounter any mishap during its Arctic polar expedition.

"The ZR-3 might be ordered to 'stand by'," says the weekly. "But what and where she is to stand by is a matter of conjecture," it concludes.

Our foreign contemporary forgets no doubt, that we have the north pole to use as a mooring mast in case of emergency.

Railway Strike Helps French Air Lines

A French railway strike in January gave the air lines leading from Paris a decided impetus. All available space on the continental machines were booked many days ahead, but extra bad weather hampered air traffic to a considerable degree.

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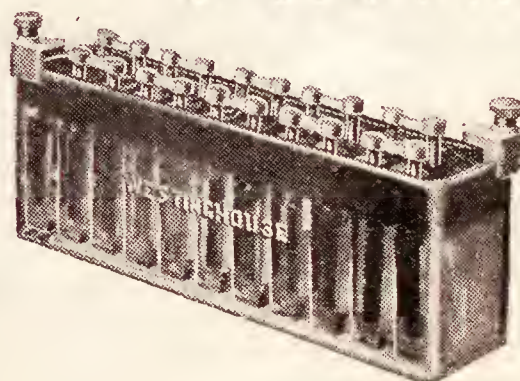
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"Prompt and Efficient Service"

Rubber Case Batteries for every make of automobile

. (Continued from page 28)

How fast would these screws have to be driven?

At a speed of 315 revolutions per minute they would lift 1560 pounds. At 375 revolutions per minute they would lift 2,150 pounds. At 440 revolutions per minute they would lift 2,760 pounds.

How long have you been at work on this device?

Irregularly for more than twenty years.

How do you connect your engine with the screws?

By suitable cables, each screw having a separate cable.

How fast would this car navigate the air?

Birds fly at a rate of from seventy-five to 100 miles per hour—some much faster. A car of this kind if properly and compactly built should do as well.

Have you applied for a patent?

Application filed in United States Patent Office, November 18, 1898.

What would a car of this kind cost?

We can only make a rough estimate—the first one would be very expensive.

Could an airship of this kind carry anything in addition to its own weight when fully equipped?

Yes. One-half or more of its weight. A car weighing 1,600 pounds could carry 800 pounds or more. Its capacity in this respect would be only limited to the strength of good steel and other materials used.

How many horse power of the engine would be required to lift and sustain this car?

About ninety. This somewhat astonished us when we first made the calculation.

How many horse power would be required to propel it?

Three or four would give a very high rate of speed.

Why do you make this car so great in length?

First. So that the screws may be sufficiently far apart as not to interfere with the action of each other. Also, so that the car will work more easily in a disturbed atmosphere.

Are there not vacant spaces in the body of this car that could be used to contain a buoyant gas?

Yes. Without increasing the size of the car for this purpose, there are vacant spaces sufficient to contain in suitable gas envelopes 4,600 cubic feet, having a lifting capacity of 300 pounds.

The War Department of the United States Government about a year ago appropriated \$25,000 to be used in experimenting upon aerial navigation. Why not ask the Government to assist you with a part of this fund?

We have inquired in regard to this appropriation and found that this \$25,000 was set apart exclusively for the use of Professor Langley of the Smithsonian Institute, who has some variegated ideas about aerial navigation with an airplane.

What would be the cost of this 16-foot model which you have commenced building?

To this we are unable to make a definite answer. We have heretofore been assured by a number of persons that if a stock company is formed for the purpose, placing the capital at not to exceed \$10,000, they would subscribe.

This we have now done and will endeavor to see that the business is conducted squarely. The successful airship will be the greatest invention of the age, and there will be no

(Continued on page 35)

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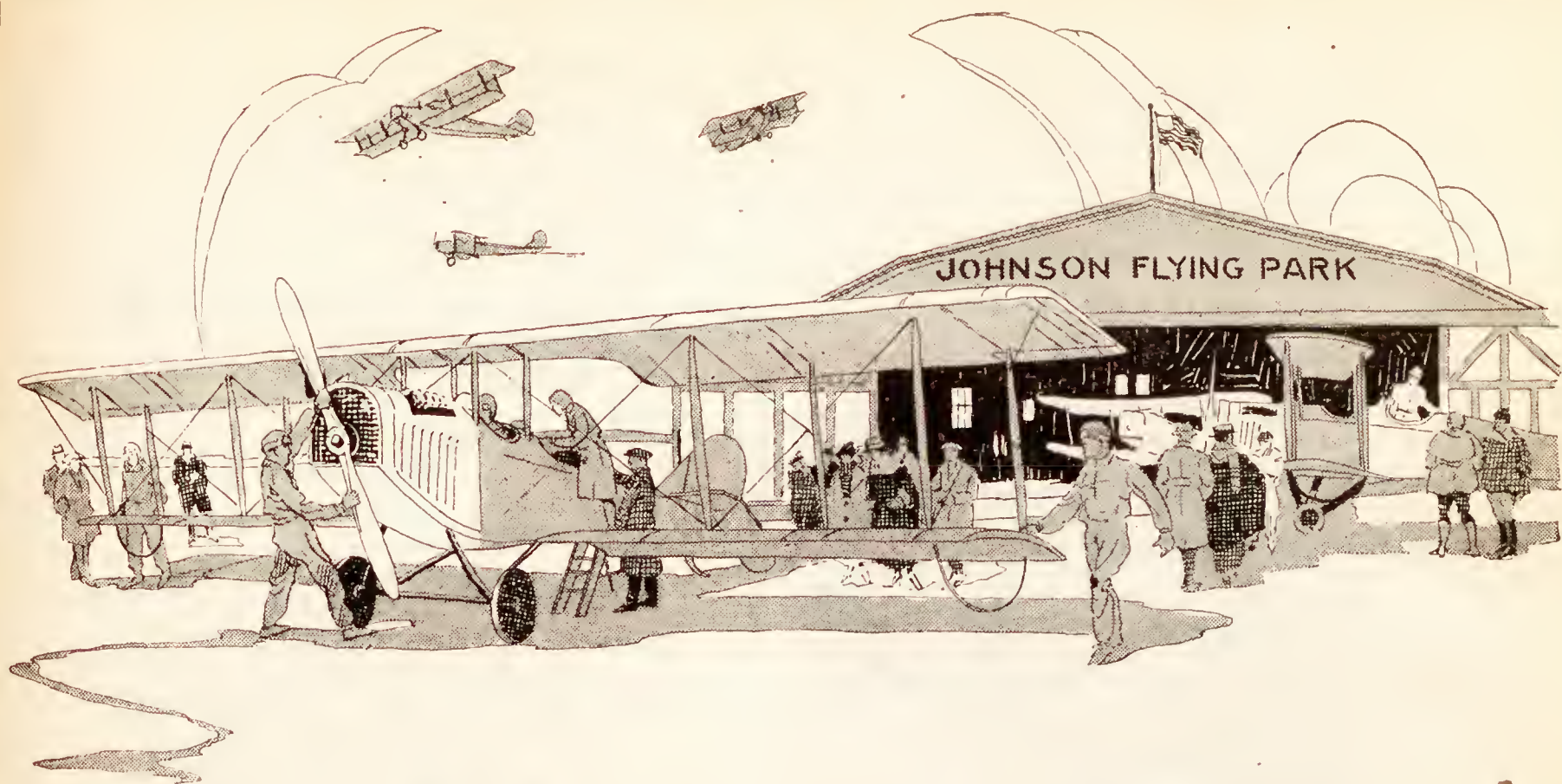
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A 15-minute **DRIVE TO FIELD**—Wayne Ave. to State Hospital. Turn right,
one mile out Wilmington Pike.

VISITORS ALWAYS WELCOME—Ladies and children given especial attention.

New Two, Three, and Five Passenger Planes Always Ready

PRICES PER PASSENGER

For \$3.00—a 5-minute ride over Oakwood and South Dayton at about 1500 ft.

For \$5.00—a 10-minute ride over Hills and Dales and Dayton at about 2500 ft.

For \$10.00—a 20-minute ride over Dayton and Suburbs at about 4000 ft.

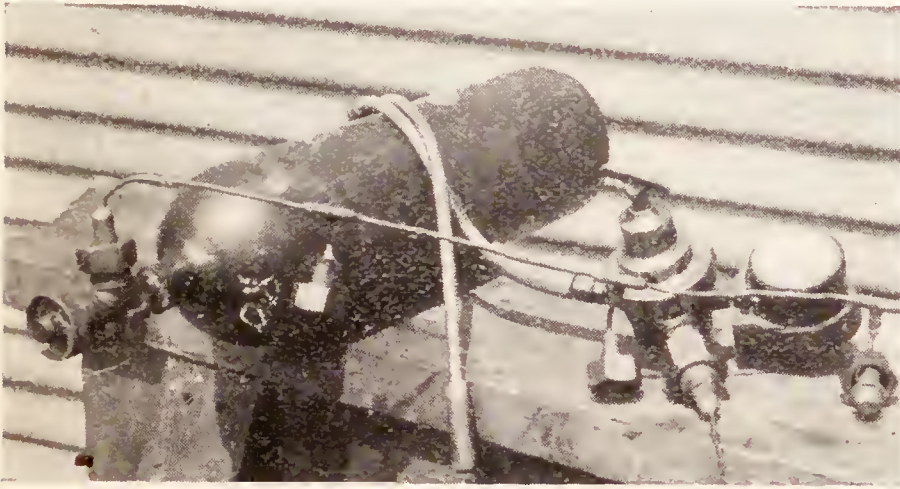
AERIAL TOUR over Miami Conservancy Dams—A 30-minute flight showing one of the world's greatest engineering feats. Party of 4 at \$10.00 each—Party of 3 at \$15.00 each—Party of 2 at \$20.00 each—One passenger, \$25.00.

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Phone Garfield 1079-J

(Continued from page 12)

low atmospheric pressures. The atmosphere exerts a pressure of 14.7 pounds per square inch upon a person on the ground. At 36,564 feet, which is now the altitude record, the atmospheric pressure is only 3.8 pounds per square inch. Cats, dogs, mice, snakes, etc., show signs of suffering and pain when subjected to this low pressure. An aviator must be in excellent physical condition in order to perform his duties under such trying conditions for even a brief period of time.



An oxygen tank with valve attachments which permits an automatically regulated flow of oxygen to the pilot while flying at extreme heights.

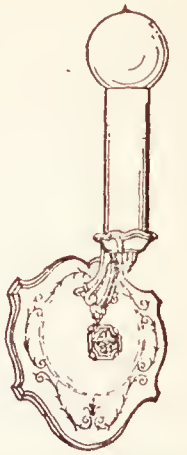
It would certainly be desirable to solve the oxygen problem by reproducing ground-level atmospheric conditions within the pilot and passenger compartments of any aircraft which is to fly at extremely high altitude. Such conditions may be realized by use of the "sealed cabin or cockpit." The air navigators are enclosed in sealed cabins or cockpits from which the necessary activities of controlling the aircraft may be performed. Fresh air at a pressure corresponding to ground level is continually supplied to the chambers so that flight may be made at any altitude without the least discomfort to the pilot and passengers. A little work has already been done along this line, but the greater part of the problems connected with such a scheme are still awaiting solution.

In view of the unparalleled progress which has been made in the art of flying during its short history of twenty years, astonishing developments may well be expected in the future. It is not improbable that the air liner of tomorrow will soar high into the air in order to take advantage of the trade and anti-trade winds which exist there, just as the marines of the sail vessels of long ago used the ocean currents to improve the speed of their ships. Equipped with all the conveniences known to modern travel the transport of the skies will carry passengers from continent to continent, across mountain ranges, deserts, plains, and oceans. Then the progress of the world will have advanced one step farther, for after all, progress of the world is measured by the development of transportation.

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HATS—CAPS—SHIRTS
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rings, economy, satisfaction, and service
come to us. We use a Heald "50."**HARRY A. GROSS CO.**

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Mr. Wetzel, Vice-President of the Douglas Company, writes: "All planes and spare parts to be used in the World Flight are finished from stem to stern with Valspar." Like so many leading designers, the Douglas Company knows that no other varnish can equal Valspar in service and protection. Constant exposure to sun or rain, abrupt changes of temperature, oil and gasoline—Valspar withstands them all without cracking, blistering or whitening in the slightest. Today Valspar is recognized the world over as the ideal varnish for airplane use.



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Established 1832

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This is one of the four Douglas Cruisers used in the "Round the World" flight. It has a normal maximum speed of 103 miles an hour, as a land plane, and 100 miles an hour, as a sea plane.



(Continued from page 30)

occasion, and we have no desire, to practice a deception on the public.

The shares of stock in this company are placed at \$5.00 each. No money will be asked until the remainder of the stock has been subscribed—quite a good deal of it has already been taken. Then monthly assessments of \$1.00 per month on each share will be called for. The payment of the first assessment will probably be arranged for December 20, 1899, and the company will make every effort to have the airship on exhibition within five months from that date.

Should you feel disposed to subscribe stock in this enterprise, please give us upon the inclosed card your name, address, and the number of shares desired.

When the stock has all been subscribed you will receive notice and the company will from time to time report the progress.

Respectfully yours,

THE GABBEY AIRSHIP COMPANY.

Dr. J. M. AMIS, Secretary.

Marine Corps Record

Seven hundred and ten trips by air is the record of the flights made by Marine Corps Observation Squadron One, stationed at Santo Domingo City, D. R., during the year 1923. This record of work done by this organization is excellent proof of its value to the Marine Corps Brigade on duty in Santo Domingo. The activities of the Squadron include scheduled flights each week to a number of towns on the island of Haiti for the purposes of expediting mail movements and for the transportation of officers of the Brigade on official duties.

A new air line, connecting Sweden and Persia, is to be opened in the near future.

Planes and dirigibles will fly by way of Stockholm, Petrograd, and Moscow. It is to be Soviet Russia's first ambitious air venture.

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Airplane Bids Sparks Bon Voyage

A very modern send-off fifty miles at sea was given to the pilot and sole occupant of a 24-foot boat sailing from Honolulu to Palestine by a plane of the Naval Air Station at Pearl Harbor, Hawaii. On Wednesday, January 9, an American, named Sparks, set out from Honolulu for the Holy Land in his diminutive craft. The next morning a station plane flew out with a camera and obtained pictures of him, then about fifty miles at sea. These pictures were published in the morning paper. On the afternoon of the same day another station plane flew out to him and dropped a morning paper and copies of his pictures to him. Mr. Sparks seems wedded to the idea of unique transportation, for some months ago he arrived in Honolulu in a packing case, properly addressed, as a stowaway.

Rate of Climb Indicator



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that has very little
slack.)



“Premier” Block, the
pride of Ky. Low ash,
no slack, slate, or clink-
ers.

The Gordon Bennett Race

The balloon race for the Gordon Bennett Trophy, which was last won by Belgium, will start from Brussels again this year. The date has now been fixed definitely for Sunday, June 15.

New Italian Aircraft Carrier

With great pomp and ceremony Italy recently launched its first naval aircraft carrier at Spezzia. This new annex to the Italian navy was formerly the steamer *Giuseppe Miraglia*. Sheds for the accommodation of nine airplanes together with workshops are installed as superstructure. A small taking-off deck is also part of the special equipment.

Paris to Build New Airdrome

While cities like Dayton, Ohio, are discussing the elimination of grade crossings and the building of a new Union Station, Paris, France, is trying to locate a more suitable location for a great Air Port. With the remarkable growth in air travel in Europe during the last few years Paris' and London both are in bad need of more suitable Air Terminals. According to recent reports, there is a scheme now in hand to abandon the present Air Port of Paris known as Le Bourget in favor of Mont Valerieu which is much closer to the center of the city. Aside from this Mont Valerieu lies in a much more pleasant surrounding with a beautiful drive approach through the Bois de Boulogne.

If the change is made the old airdrome of Le Bourget will likely be retained as a depot and repair station.

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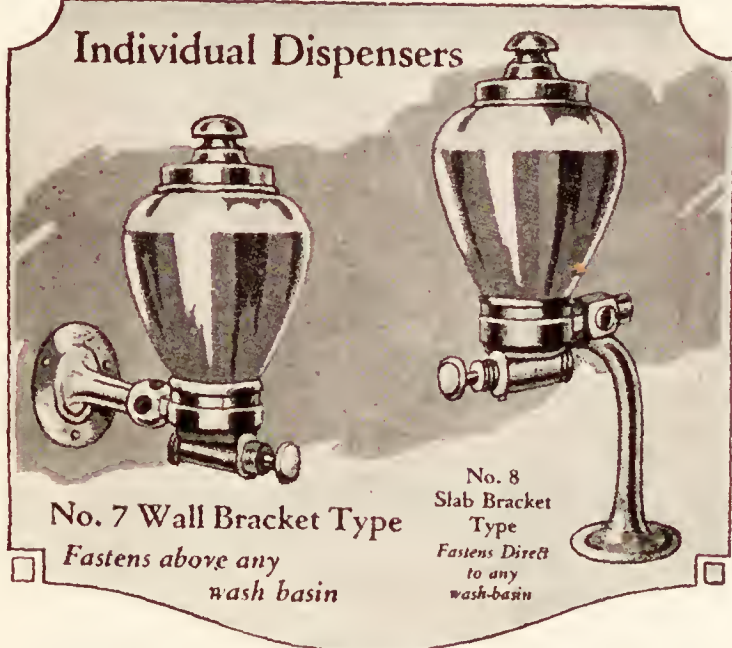
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Winter Photographic Flying Successful

A temperature of 40° below zero does not sound pleasant to most pilots and no doubt many would prefer to remain at home instead of flying in such extreme weather.

In Canada, however, it is no unusual thing to see pilots flying in the winter using planes mounted on skis.

The Fairchild Aerial Surveys, Ltd., of Canada, have been conducting a series of extremely interesting experiments in winter aerial photographic flying using a Standard D. H., also mounted on skis.

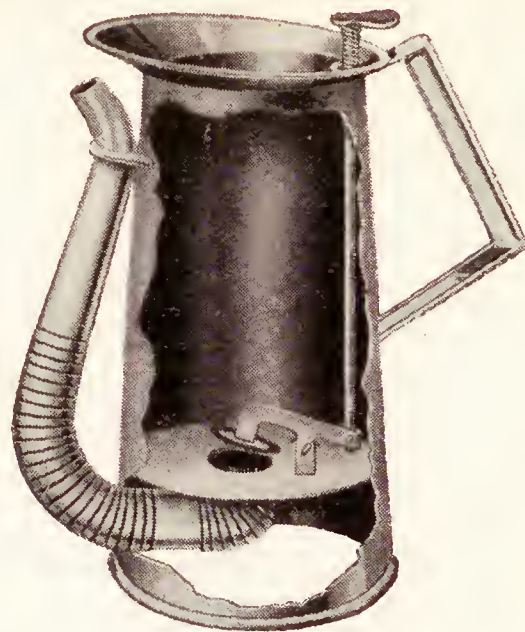
The pilot K. F. Saunders, found that it was not the cold that hampered the work as much as the wind. In order to counteract this, he had the holes in the fuselage carefully plugged, and in the camera compartment where the camera points down through the floor, a cone was built around the camera. This cone had a skirt attachment which prevented the wind from blowing into the operator's face.

The problem of the water freezing in the radiator was easily solved. For the first time in flights of this kind, kerosene was used in the radiator as a substitute for water and it worked. Getting the motor started was another difficulty to be overcome and this was done by using a blow torch in the crankcase.

The extraordinary thing about winter flying according to Saunders, is that at an altitude of 10,000 feet, the temperature is generally 10° warmer than on the ground.

Plane Dissipates Mine Scare

What was believed to be a deadly German mine was located by the personnel of Coast Guard Station 179, and a plane from the Naval Air Station at Hampton Roads was despatched to eliminate the floating terror. Upon arrival the pilot of the plane discovered that it was not a German mine, but was a harmless one used by the Fleet in target practice. In order to relieve the fears of all concerned, however, the fixtures on the mine were removed and its harmlessness demonstrated.



The Measure of Convenience

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The Brookins Measure is made in one-quart, two-quart, gallon, and five-quart sizes,—all copper finished. It is built to serve and to last,—and it does both. Most jobbers and dealers in automotive equipment can supply you with Brookins Measures. If yours can't, write us direct.

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Where will I be able to get protection?

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New York—West Indies

On January 21 the Aeromarine all-metal flying boat, Morro Castle II, left New York for Porto Rico and other islands in the Caribbean Sea and by the time it is due back at New York in May the boat will have flown 12,000 miles.

The pilot, Mr. C. J. Zimmerman, is accompanied by Col. R. L. Streeter, Vice-President of the United States Aluminum Co., the manufacturers of the alloy used in the hull construction, F. A. Thompson, special correspondent of the *Outlook*, E. Jessup, associate-editor of *Field and Stream*, W. D. Hamilton in charge of aerial photography for Underwood and Underwood, and S. F. Walton, mechanic.

Although only launched last June, the boat already holds the record of being the first single-engined Liberty-engined boat to carry 3,445 pounds of useful load and also to carry seven passengers to 13,050 feet.

The all-metal hull weighs 100 pounds lighter than a wooden hull of similar displacement and is fitted with six water-tight bulkheads, any two of which are sufficient to keep it afloat.

After being in the water for three months carrying over 1,000 passengers and flying over 10,400 miles, the wing-tip floats were perfectly dry and only some rain-water was found in the hull.

The flying-boat joined the United States Atlantic Fleet in the battle maneuvers in southern waters.

New Ruling on Refueling Flights

We are interested to note that a decision has been reached by the Federation Aeronautique Internationale with respect to the controversy existing over the acceptance of refueling flights as legal competitors with non-refueling endurance flights. The facts of a protest against this ruling entered by the N. A. A. were given in a recent issue of *Slipstream*, and the announcement that the F. A. I. has ratified a new classification for refueling flights comes as a logical course of action by this body.

In August, 1923, Lieutenants Lowell Smith and Richter, by refueling their plane from a hose dropped to them from another plane while flying, were able to stay in the air thirty-seven hours, thereby bettering the endurance record of Lieutenants Oakley G. Kelley and John A. Macready who, with the T-2 Air Service Transport remained in the air over thirty-six hours without replenishing their fuel supply.

The French press was active in its denunciation of permitting refueling flights to be accepted in non-refueling endurance record honors, and it is well that a new classification has been made for such flights.

As a consequence of the new classification Lieutenants Kelley and Macready retain their laurels as holders of the endurance record, and for distance and speed over the 2500 to 4000 kilometer course.

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PROOF

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Wright "T" Engines have been installed in 8 different types of planes. Two of these types are single seat land fighters used as racers; one is a single seat sea plane; one a twin engine long distance boat; four are combined land and sea planes usable for bombing, torpedo, observation, cross-country, and spotting purposes.

Only the wide experience of the Wright Organization in correct aeronautical engineering practice and design makes possible this reliable versatility in Wright Engine Performance.

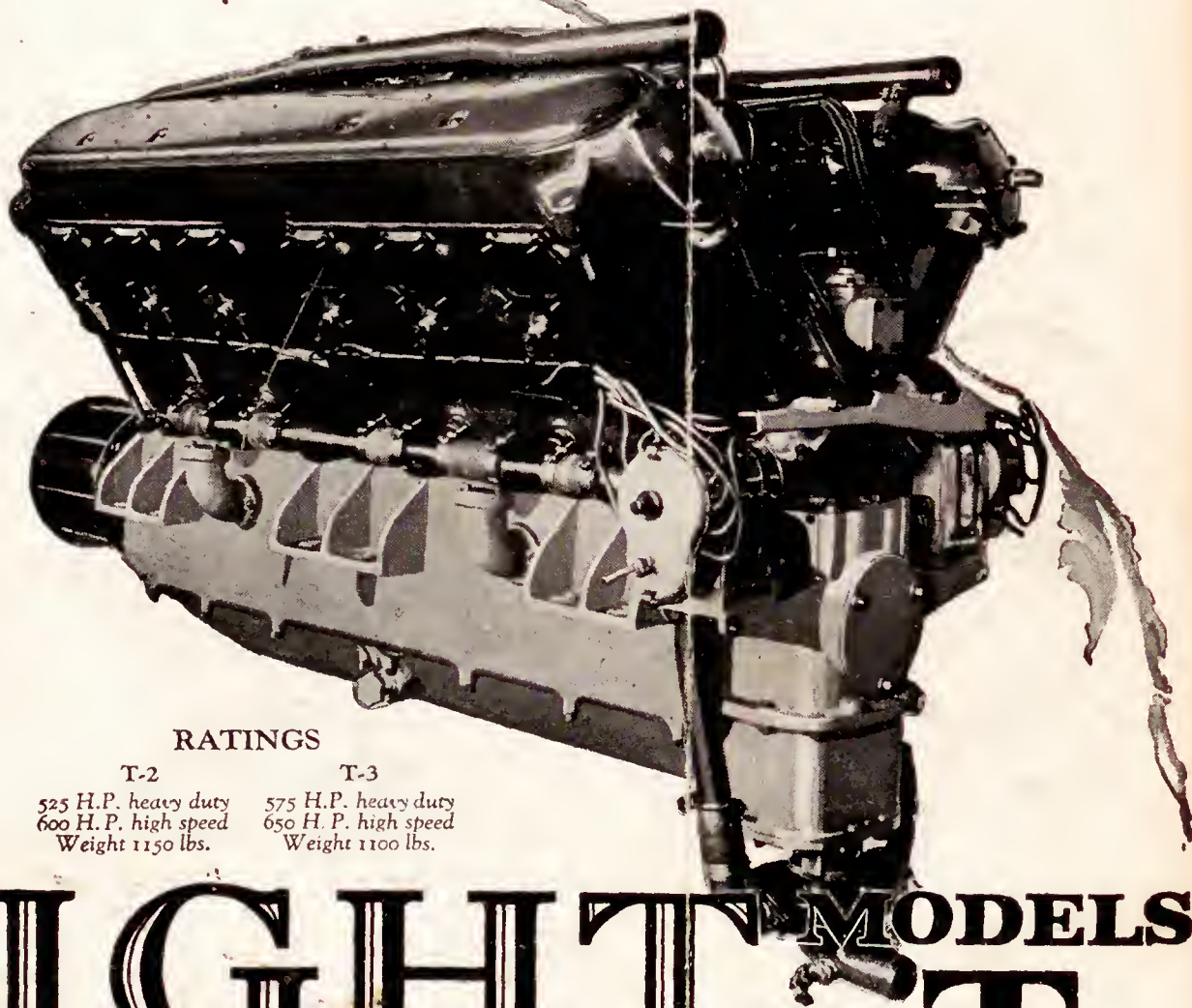
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Wright "T" Engines are being used in the multi-engine Navy PN-7 flying boat. Wright "T" Engines were worthy competitors in the recent races for high speed single seat planes both land and sea. They are equally well adapted for the intermediate planes such as bombers, observation planes and two seaters



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MONTHLY
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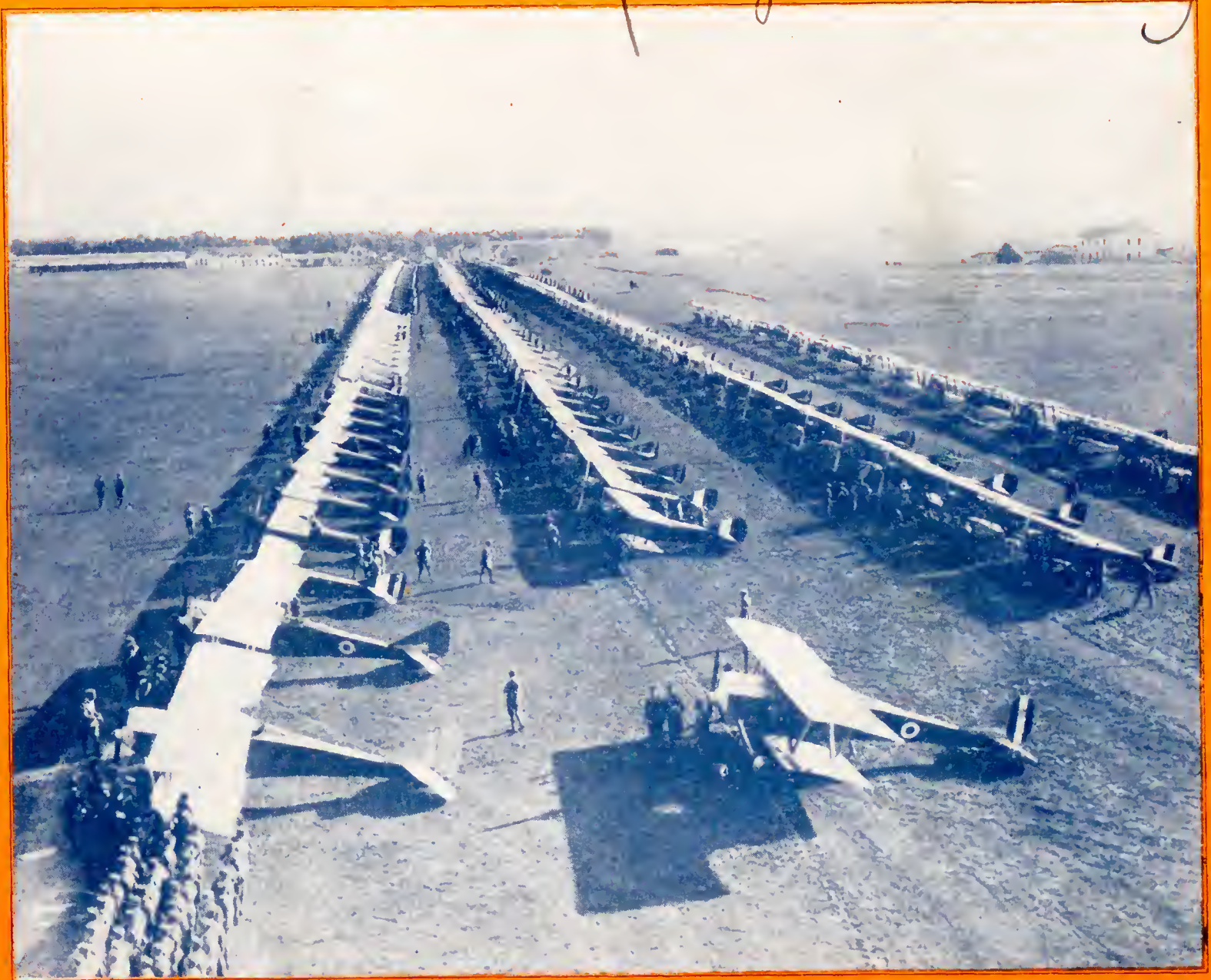
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MAY
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A DISPLAY OF ITALY'S AIR DEFENSES

-- PRELIMINARY PLANS FOR --

THE INTERNATIONAL AIR RACES

The Battle of the Platte -- An Aerial Visit to San Jose -- The Philippines,
and Other Features In This Issue

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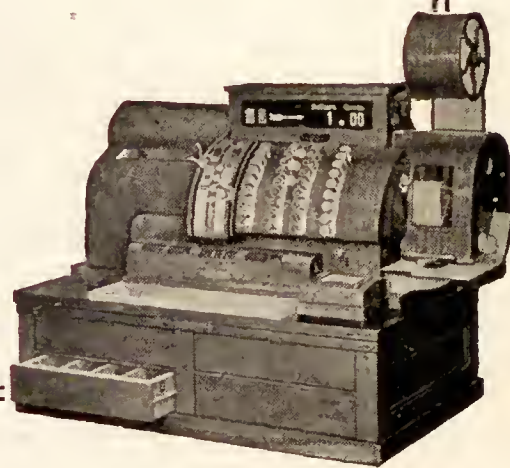
What a National Cash Register means to you as a customer

WHEN you see a National Cash Register on a merchant's counter, you know that you are going to receive quick, accurate service. Long, tiresome waits for parcels and change are eliminated in the store where cash registers are used.

The merchant who uses this system is conducting his business on an up-to-date basis. He is interested in giving his customers the best service possible and an accurate check on all the money they spend in his store.

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VOL. 5

MAY

NO. 5

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FRED F. MARSHALL **Editor and Business Manager**

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IT'S THE EAGLE'S OWN GAME



STILLSON-9

Courtesy Dayton Daily News

Preliminary Plans for the 1924 Races

By Hugh H. Robertson

Assistant Engineer, Air Races



C. H. Paul

Appointed to Engineer the Affairs of the 1924 International Air Races.



Hugh H. Robertson

Assistant Engineer, International Air Races of 1924.

THE history of the Pulitzer Trophy Race, world speed classic, around which has gradually evolved the annual International Air Races, shows each succeeding race enjoys wider publicity values, attracts larger crowds of spectators, and requires greater detail of work than its predecessors.

From the initial Pulitzer Race on Long Island in 1920, through the second in Omaha in 1921, the third in Detroit in 1922, and the fourth in St. Louis in 1923, all indications point to the races of 1924 in Dayton as paramount. Twelve major events are catalogued in the card to cover the three days of October 2, 3, and 4.

Fifty thousand dollars in prizes has been already appropriated by the Dayton committee, a sum four times that offered before in these races. In the Pulitzer Race alone prizes are offered equaling the total prizes for all races in Detroit in 1922. In one Speed and Efficiency Race for Light Airplanes this year, Dayton is offering more than was offered Pulitzer winners in the past.

Prize money attracts entries and a large number of entries insures a large attendance, with consequent increased work for their comfort and convenience. In Detroit in 1922 approximately 20,000 persons paid admission to the races. In St. Louis last year the attendance was about 20,000 on the opening day, 30,000 on the second day, and 100,000 on the last day, on which the Pulitzer event was run. In fact, interest and crowds have grown even faster than intrepid pilots have pushed forward the speed record. From prece-

dent, and past performances alone Dayton might expect a larger problem than has confronted other hosts to the races.

Dayton is not content, however, to base its expectations upon such formulae. It has divided the preliminary work into two major branches, namely: (a) encourage the attendance of spectators; (b) take care of them upon arrival.

To insure the widespread interest such events deserve, a systematic and businesslike advertising and publicity campaign has been drawn up. This is designed to offset the fact that Dayton is itself the smallest city yet to handle the races. In addition to its urban population Dayton plans to draw extensively from a territory covered by a 250-mile radius and it is in this zone the advertising and publicity will concentrate.

A precedent for Dayton's belief that it can expect crowds of size lies in the attendance at the Air Service Relief Fund exhibition at McCook Field on Labor Day last year when 100,000 persons passed the gate. Similar methods of advertising and publicity on a much larger scale should presumably draw as well this year. Conservative estimates for the three days of racing in October, provided the weather is fair, place the total figure at between 225,000 and 250,000.

To care for such crowds requires serious planning and months of work. Already Dayton has established headquarters and a staff to which will be added other executive departments as the need arises. Financ-

ing of the arrangements has been completed. In fact, the Finance Committee had in March exceeded the quota set for requirements. Profits from the races, if there be such, will be applied to local or national philanthropic purposes.

The housing of this immense gathering, parking of their automobiles, traffic regulations for the trips to and from the field, road improvements, preparation of the race course and of the field and spectators' seating—all these items represent weeks of work and Dayton committees are already beginning such labor.

TRANSPORTATION to and from the field represents a problem that is stupendous in itself. St. Louis figures show that during the races and for the few days preceding, a total of 102,259 persons paid trolley fare out to the flying field. On the last day of racing 23,000 automobiles, by actual check, passed into the flying field. An average of three persons to each automobile would show about 70,000 persons. These figures do not take into account thousands of cars parked along the roadways, nor is there any way to check the great number who forced their way into the field without paying because of inadequate guards, only one battalion of soldiers being on duty. St. Louis officials estimate at least 30,000 evaded admission prices on the last day of racing. Tickets were collected from 81,000 on that day.

To meet the probable demands of transportation this fall, shuttle service by steam railroads, the Erie and the Big Four, is planned. Paralleling these tracks will run the fast express service of the electric traction lines. And on a network of roads improved for the races will travel at least fifty percent of the crowd, following a carefully worked out system of one-way and two-way regulations designed to minimize congestion.

For the accommodation on the field of the spectators, box seats for 40,000 will be prepared along the "front line" fence; to the rear or on the side of these seats upon a natural elevation will be preferred parking space accommodating perhaps 25,000 automobiles whose occupants may witness the races from their cars. Further back will be "dead" parking spaces for thousands of additional automobiles, whose occupants will either find seats in boxes or watch the races from the promenade.

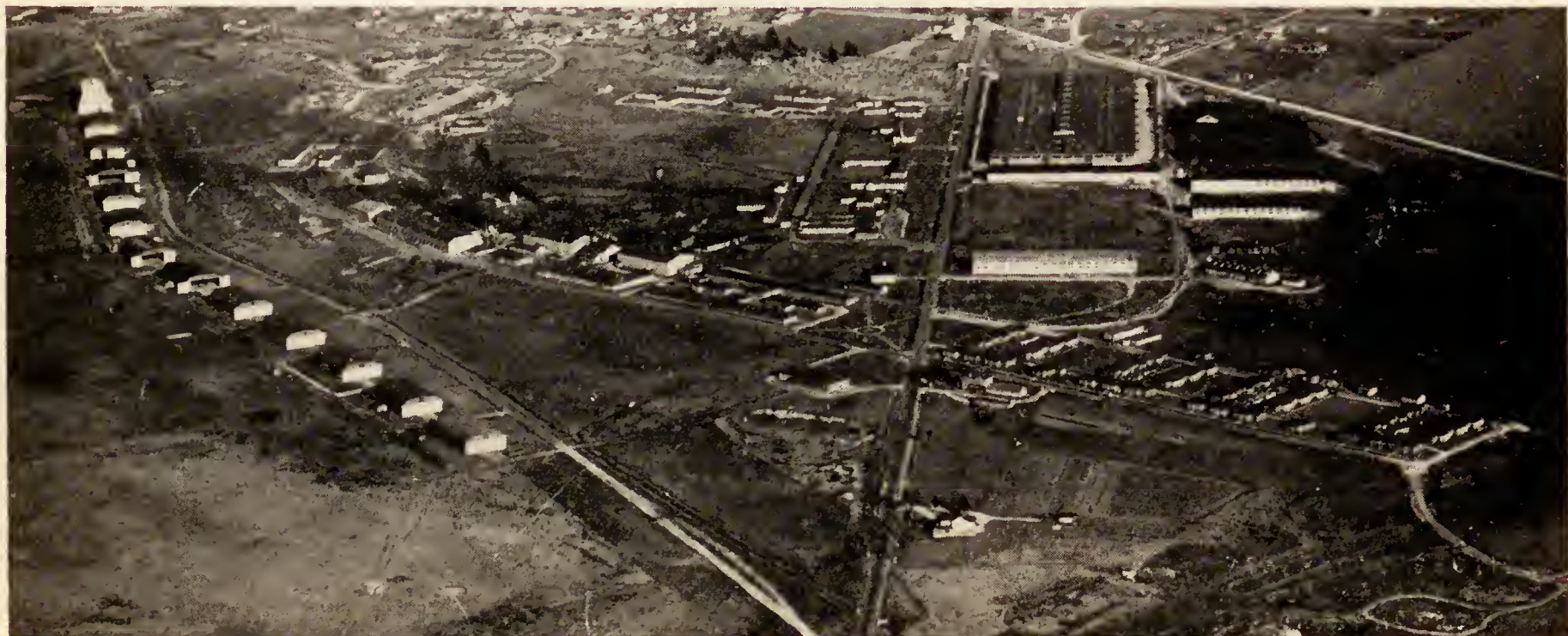
Concession stands sufficient to "feed and drink" the crowds will be placed at the rear of the boxes.

In the technical conduct of the races arrangements are already started. Regulations for the twelve events have been distributed to all possible competitors and inquiries received at this date indicate a large number of entries. The laying out of the course, selection of pylon sites, location of start and finish line, location of timers' and press stands, scoreboard points, etc., have already been started. Preparations will be made to accommodate a larger number of civilian and military airplanes than has been grouped together since the war.

In addition to the races it is the intention of the committee in charge to impress upon the spectators the commercial adaptability of the airplane. Dayton believes in the future of commercial aeronautics and therefore, supplementing the races, will be exhibition contests and demonstrations designed to show the probable utilization of aircraft, both airplane and dirigible. "Sandwiched" in between all these will come exhibition flying by military and civilian squadrons so that there should be no lull or "dead" spot at any time of the three days.

Only through the courtesy of previous race committees has Dayton been enabled to progress so fast. Committees in charge of certain details at Detroit in

(Continued on Page 24)



A recent aerial view of Wilbur Wright Field, near Dayton, Ohio, where the International Air Races will be held October 2, 3, 4. The greatest crowd ever assembled in the Middle West is expected to visit this Air Field during the event.

THE BATTLE OF THE PLATTE

How Air Service Planes Bombed an Ice Jam

By Major Lawrence S. Churchill



Official Photo, U. S. Air Service

Backwater above the great ice jam spreading over the lowlands along the Platte River, Nebraska.

ON March 4 and 5 the U. S. Army Air Service fought a decisive battle with the Platte River in Nebraska, between Columbus and Valley, which resulted in the complete capitulation of the river and the signing of an armistice within forty-eight hours after the beginning of hostilities.

At this time of the year the Platte River assumes an ugly, hostile attitude and threatens to invade foreign territory to the north, thereby endangering the inhabitants of the country and threatening particularly the main line of the Union Pacific Railroad. In 1912 the Platte River invaded this country and was subdued only after a long and bitter battle and after much destruction of railroad property.

Some weeks ago the Union Pacific Railroad Company, on seeing the first signs of restlessness on the part of the Platte, made the wisest move of its career. It requested the assistance of the Army Air Service in repelling the possible invader. Accordingly, plans were made to have available for use two NBS-1 airplanes and two DH-4M airplanes, fifty 300-lb. and three hundred 100-lb. demolition bombs. A reconnaissance was made between Omaha and Columbus, Nebr., to locate possible bases of operations which could be used in case of hostilities. Thus, during the period of strained relations, our forces and munitions were mobi-

lized and made ready for action; the NBS-1 ships at Chanute Field, five hours away, and the DH-4B's at Fort Riley, one and one-half hours from Omaha. The bombs and a supply of gasoline and oil were loaded on cars and held ready to be moved to any point on short notice.

On February 27 our agents reported that the Platte River was mobilizing its forces, but the probable point of attack could not be determined. Accordingly, the NBS-1's were ordered to proceed immediately from Chanute Field to Fort Crook Field and be prepared to proceed to the combat zone. At 9:00 a. m., March 3, word was received that the Platte River had commenced an invasion of the territory east of North Bend, Nebraska, and had protected its left flank with an ice gorge east of a bridge south of North Bend. This gorge was out of reach of the ground troops using dynamite and the Air Service was requested by General (Manager) W. M. Jeffers, U. P. R. R., to attack it with bombs. The NBS-1's were ordered to proceed to Richland, Nebraska, where a base was established and bombs, oil, and gas were hurried to this base. The Commanding Officer, Seventh Division, Air Service, was instructed to proceed to Richland with two DH's, one of which was a photographic ship.

AT 8:30 Tuesday morning, March 4, the first bombing ship piloted by Lieut. John F. Whiteley, with Lieut. William M. Langan as bomber, proceeded to attack the Platte's left flank with two 100-lb. bombs. This ship was followed within a half hour by the other containing four 100-lb. bombs, piloted by Lieut. Alfred Lindeburg, with Lieut. Robert H. Finley as bomber. Due to insufficient preliminary reconnaissance these bombs were not dropped in such a place as to be effective. Therefore, a close range reconnaissance was made immediately by General Jeffers and Corps Area Air Officer, who commanded the air forces. Upon returning to the field, an operation order was issued directing Lieuts. Whiteley and Langan to attack with four 300-lb. bombs the ice gorge five hundred yards east of the wagon bridge, across the Platte, one mile south of North Bend, to be followed by Lieuts. Lindeburg and Finley with ten 100-lb. bombs, who would attack the ice on a west to east line immediately east of the first point of attack. This operation was completely successful. Lieut. Langan's aim being unerring, the bombs dropped to their mark and at 2:30 p. m., the Platte's fortifications were dissolved, a channel formed, and the hostile forces which had captured the railroad at several points began to withdraw as their flank had been enveloped. Lieut. Finley then attacked and

farther harassed the enemy. Thus, within six hours after going into action we had won a decisive victory.

At 3:30 p. m. word was received that the enemy was concentrating about fifteen miles down the river and a threatening gorge was forming. Lieuts. Whiteley and Langan, with Major C. L. Tinker as an observer, were dispatched with two 300-lb. bombs to break up this concentration. Unfortunately, this ship was forced to land before reaching the objective, due to a radiator leak, but the bombs were dropped on some stragglers in the river, which evidently discouraged the threatening concentration further down, as it broke up and that danger was passed. It was believed then that the enemy was in full retreat, but during the evening a message was received stating that the enemy seemed to be concentrating between Valley and Mercer. This concentration was watched throughout the night and during the following morning. At noon, March 5, it was decided that this hostile concentration was not dangerous but that we would invade the enemy's territory and make sure that our victory was complete. The bombers were each loaded with four 300-lb. bombs and ordered to proceed to Fort Crook Field, attacking the enemy en route. This attack caused the complete

(Continued on page 31)



Great ice flows sweeping down stream.



Huge ice cakes smashing into railroad bridge.



Ice gorge threatening the bridge of the Union Pacific Railroad.



Official Photo, U. S. Air Service, Released Exclusively to Slipstream

AN AERIAL VISIT TO SAN JOSE

"Flight of Courtesy" to Ancient Spanish City

By Lieut. Corley P. McDarment
(Especially to "The Slipstream" Monthly)

RETURNING from experiences smacking of romance and teeming with unusual adventure, the group of U. S. Air Service aviators who recently made a "flight of courtesy" to the principal Central American capitals turn over many interesting features of this trip for the benefit of *Slipstream* readers.

The flight proves further that the era of aircraft bids fair to create a closer bond of relationship in the social affairs of the various races of the earth. With rugged country, vast stretches of desert land, bleak ice wastes and open seas thus lifted as barriers in bringing about direct and convenient intercourse between the far removed nations it is one of the happiest thoughts to comprehend what air travel will mean to the future welfare of all people.

The return of the aviators from Central America also disclosed through their vivid accounts of the region and the beautiful aerial photographs of the interesting districts that there are here vast expanses of old Mother Earth still almost unscathed by the ravages of civilization and whose fabulous natural wealth has been retarded from full development through the mistaken idea that the region is one of burning heat and infested with death-dealing fevers, poison reptiles, and cut-throat half-breeds.

Possibly the most interesting of the various countries visited, and strangely enough one about which we know the least, is Costa Rica, where the flyers arrived on February 4, at the capital, San Jose, from Panama. A mighty throng of people, including the President and other high officials, greeted the aviators as they landed in the flying field on the outskirts of the ancient city.

Costa Rica has an area of 31,220 square miles, is twice as large as Switzerland or Denmark and three times as large as Belgium.

Picture, if you will, a tropical land where a prolonged May-day splendor prevails, where neither oppressive heat nor freezing cold is present, and where bright flowers are always in bloom; where there is assured rains, lands whose fertility is exhaustless, and whose seasons permit of two or more crops a year; where there are forests of valuable timber, mountains rich in gold, silver, copper, iron, coal, mercury, marble, and alabaster; where there are numberless streams to furnish power for industries and water for irrigation, such a place is Costa Rica and situated within the very door-yard of a region in our own country where people are making a hard and unremunerative effort trying to make lands on the border of deserts produce crops.

The principal crops of Costa Rica are coffee, corn (maize), and rice, while the aviators relate that the topography of the country is so variegated that the most fanciful person would find it quite convenient to choose

the climate best suited to his taste by simply ascending or descending to the various plateau levels.

The mountains of the country traverse it southeastwardly, rising abruptly from the level lands on the coast and forming beautiful plateaus and extensive valleys at different altitudes which resemble the terraces in a garden. The presence of these conditions provides Costa Rica with the most varied productions of both tropical and temperate zones, and indeed within such short distances that a man can, in one day, attend to his wheat field situated in the colder region of the plateau, give



Official Photo, U. S. Air Service

One of the army airplanes flying over the coffee fields of Costa Rica.

his instructions on a coffee plantation located in a warmer and lower position, descend still further to the sugar cane "fincas" and from thence proceed to hotter and lower lands, to inspect the work of cacao gathering, banana planting, rubber cultivation, or mahogany cutting.

SAN JOSE, the ancient Spanish city and present capital of Costa Rica, is located in a beautiful valley. It is regularly built on the modern checker-board plan with broad macadamized streets, crossing at right angles, and well illuminated with electric lights. Several fine squares containing park-like gardens are found at various points in the city.

The perfectly straight streets are divided into two groups, those running north and south are termed "Calles," while those running east and west are called "Avenidas."

The town is provided with electric trolley lines, but the oxcarts are still in use almost exclusively for hauling, including the conveyance of the traveler's trunk to his hotel, and forms a striking contrast to the bustling trolley. Among the features of interest is the National Theatre, a monument of artistic beauty, containing Italian marble pillars, columns, statues, and frescoes, and resembling in its decorations the U. S. Library of Congress. It was erected at a cost of \$1,000,000. There is also to be found the National Park, the cathedral, the National Museum, the school of law, the National Library, and the Institute of Physical Geography.

While strolling down the streets of San Jose one might well imagine himself in one of the larger cities of Europe, to behold the attractive shop windows filled with modern imported wares and dainties. This rich coffee land is prodigal, creating an extravagant people, and Costa Rica spends so freely that her foreign trade amounts to five times the average per capita of the other Central American countries. Ten million people of the Costa Rican type in Central America would soon change our attitude of disinterestedness, is the opinion of the aviators. With such a representation there would be a commercial prize on our borders worth having.

Not one of the least attractions to be found in Costa Rica and especially in its capital city is beautiful women. Some of them are fair-haired and have blue eyes, but the dark-eyed ones are quite in the majority, as observed by the flyers. The little country is quite proud of its pretty girls and its capital, while the Gringo's provincial preconceptions are overwhelmed by the scene and the setting in a nook of the Cordilleras.

BUT Costa Rica has one disconcerting trait which we dare say might be held with considerable distaste by the prospective immigrant from her northern neighbor. The mighty mountain range of the Cordilleras which traverses the little country contains a number of volcanoes which, while in themselves not particularly unruly, can be blamed for the periodical earthquakes which

never seem to cease their subtle ill-boding rumbles. The danger of destructive earthquakes is so prevalent that few of the buildings are more than two stories in height. These earthquakes are regarded by the Costa Ricans as the serpent in their land of paradise and all too often have they watched their beautiful cities thrown down by the rocking of the earth's crust.

As far back as 1608 the earliest records deplore the ravages of the earth shocks. In the earlier history, the city of Cartago was the principal settlement and the capital. This city has been shattered so often by earthquakes that it is a problem to keep the low buildings in repair. The city also has experienced destructive volcanic eruptions and in 1723 an eruption of the volcano Irazu, accompanied by a severe earthquake, completely dismantled the city and covered it with a heavy layer of ashes and sand. Again in 1831 Cartago was thrown down by a severe earthquake and again in 1851 to 1887 there were periodical visits of earth shocks of more or less destructive character. In 1876 fully twenty-four severe earthquakes struck Cartago, while a quake in 1910 again destroyed the city and almost completely wrecked San Jose, thirteen miles away.

Although the Air Service aviators paid their visit and were able to hold their equilibrium, a few weeks later a very serious earthquake struck San Jose and seriously damaged the city. A report issued from the Georgetown University Seismological Observatory states that on March 4 a cablegram was received verifying the seismograph calculations that a heavy earthquake struck Port Limon and San Jose, damaging many buildings. Later a private letter was received by Francis Tondorf, Chief Seismologist of the University, giving a full account of the quake, and describing the terrifying scenes which followed the first severe shocks. Many of the buildings, partially destroyed in 1910 and improperly repaired, crumbled like mud houses, while many of the fine public buildings lay in ruins.

The accompanying aerial photographs of San Jose are perhaps the latest views available showing the beautiful city intact.

Thus to those who can discount the danger of earthquakes, Costa Rica offers a veritable paradise. This little republic is readily accessible and offers such wonderful inducements to either the fortune seeker or the naturalist that it certainly should be better known.

The official flight party was composed of Major Raycroft Walsh, commanding; Captain Andrew Smith, Flight Surgeon; Lieutenant Perry Wainer, Adjutant and Radio Officer; Lieut Leland Miller, Photographic Officer; Lieutenant F. P. Albrook, Engineering Officer; Lieutenant Len Beery, Navigating Officer; Technical Sergeant, Nick Roesser; Technical Sergeant, L. R. Crevier, and Mr. G. R. Lewis, representative of an American film company, who had requested to make the flight with the aviators. The party traveled in two DeHavilland airplanes and one Martin Bomber.



Ancient city of San Jose, partially destroyed in the late earthquakes. It was founded in 1738 by the Spaniards and became the capital city in 1823.



San Jose, capital of Costa Rica, from 1,000 feet aloft.



Left to right—Lt. Miller, Lt. Wainer, Major Walsh, Major Bradley, Lt. Albrook, Lt. Beery.



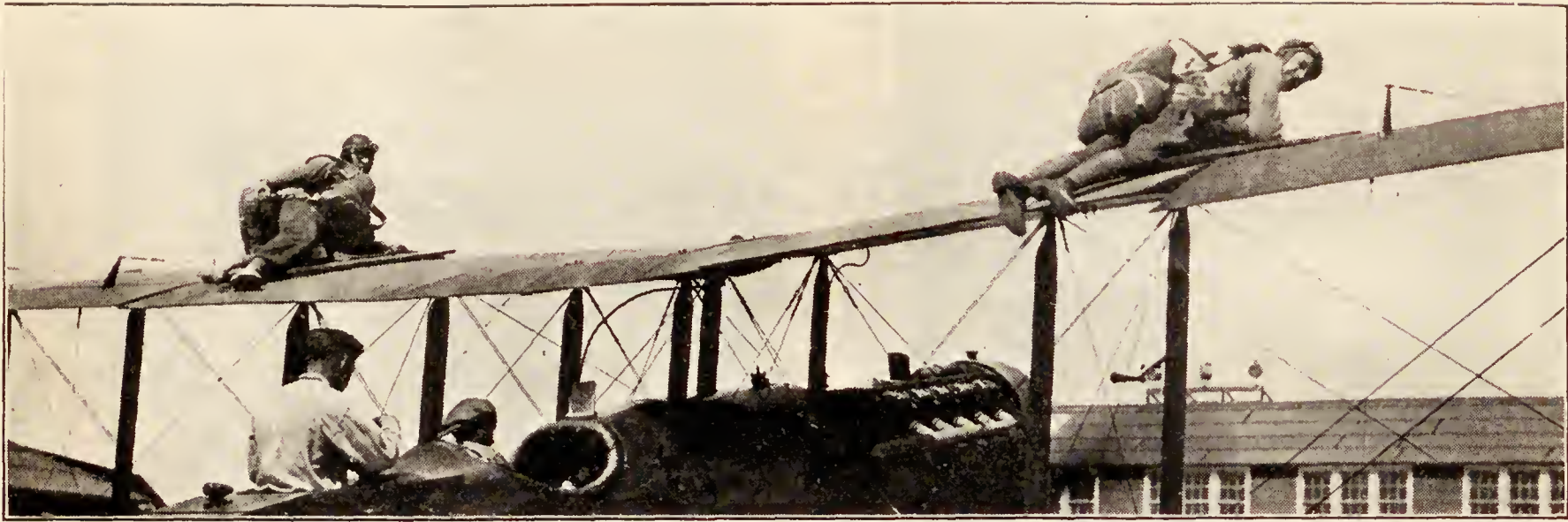
The ancient capital city of Costa Rica lies at the foothills of the volcanic Cordilleras. The mountains in the background rise to 6,000 feet. Note the airplane belonging to the flight formation.



The American Legation in San Jose, reported destroyed by recent earthquakes.



Official Photo, U. S. Air Service, Released Exclusively to Slipstream
Airplane view of San Jose, Costa Rica, showing the famous public garden, Morazan, which contains a collection of practically all the representative flora of Costa Rica.



The accompanying illustration shows two flying cadets at the Primary Flying School of the Army Air Service, Brooks Flying Field, San Antonio, Texas, ready to make a daring parachute jump from the wings of a plane.

The Brooks Field School is provided to furnish a means of training in flying for the officers detailed in or transferred to the Air Service and to build up a reserve of flyers who could be called into service in the event of war. The Primary Flying School was first constituted at Carlstrom Field, Arcadia, Florida, on November 17, 1919. Later to follow out a policy of concentration and economy, Carlstrom Field was aban-

doned and the school was transferred to Brooks Field, the movement being completed on June 30, 1922.

The course at the school covers a period of six months. Classes begin on the second Monday in September and the third Monday in March. The course is divided into three parts, as follows:

Part One: Basic Military Course, given to all Flying Cadets.

Part Two: Regular Ground School Course, given to all Student Officers and Flying Cadets.

Part Three: Flying instructions given to all Student Officers and Flying Cadets. The Ground School Course and flying instructions are given concurrently, the mornings, in general, being devoted to flying and the afternoons to ground instructions, subject to weather conditions.

WILL IT BE GOOD WEATHER FOR THE AIR RACES?

A RECORD FOR THE LAST TEN YEARS OF THE FIRST FIVE DAYS OF OCTOBER

October	Temperature					Minimum					Mean Average				
1911	76-67-75-75-62					57-55-51-54-46					66-61-63-64-54				
1912	66-68-71-76-81					40-41-47-54-50					53-54-59-65-66				
1913	68-66-66-75-80					55-54-50-44-51					62-60-58-60-66				
1914	72-80-78-75-81					47-47-54-57-58					60-64-66-66-70				
1915	61-70-78-81-55					54-49-58-51-44					58-60-68-66-50				
1916	66-75-77-81-83					39-43-46-45-55					52-59-62-63-69				
1917	60-68-67-67-59					44-43-54-50-41					52-56-60-58-50				
1918	66-79-72-75-83					41-59-53-46-60					54-69-62-60-72				
1919	85-89-87-83-72					63-67-65-66-66					74-78-76-74-69				
1920	52-63-74-80-65					43-38-48-54-46					48-50-61-67-56				
1921	70-73-62-54-62					49-49-46-41-38					58-61-54-48-50				
1922	84-87-84-87-86					59-57-60-57-59					72-72-72-72-72				
1923	70-70-70-62-56					51-47-48-41-36					60-58-59-52-46				

P R E C I P I T A T I O N

1911	.27	.11	T	.04	0	1919	T	0	0	.06	.92
1912	0	0	T	0	0	1920	0	0	0	0	0
1913	0	T	0	0	0	1921	0	.18	0	0	0
1914	0	0	.01	.01	0	1922	0	0	0	0	0
1915	.15	0	0	1.3	0	1923	0	0	0	0	0
1916	0	0	0	0	0	Total Days -----					65
1917	0	0	.19	T	.01	Clear Days -----					47
1918	0	0	0	0	.36	Rainy Days -----					13
						Trace of Rain -----					5

THE PHILIPPINES

An Aerial Tour of the "Head Men" Country

Editor's Note:—The Camp Nicols, Rizal, P. I., correspondent recently contributed a very interesting report on a reconnaissance flight of Air Service officers to Zamboanga, Mindoro, P. I., made some time ago. The report gives a vivid description of the region traversed by the flyers as well as intimate touches on the manners and customs of the natives of this little visited section of our island possessions. We are glad to offer the story for the benefit of Slipstream readers.

On December 5, 1923, Captain Thomas J. Hanley, Jr., 28th Bombardment Squadron, A. S.; 1st Lieut. E. C. Batten, 3d Pursuit Squadron, Kindley Field; 2d Lieut. K. N. Walker, Philippine Air Depot; Master Sergeant W. Adams, 28th Bombardment Squadron, A. S.; Staff Sergeant Charles Dotta, 3d Pursuit Squadron, Clark Field, and Private E. A. Plummer, 28th Bombardment Squadron, accompanied by three DH-4B planes, boarded the steamer *Pompey* for Zamboanga, the capital of Moro Country, in compliance with orders from Headquarters Philippine Department, directing aerial reconnaissance in the vicinity of Zamboanga.

On that date it was impracticable to make the journey by air, for the reason that the flying fields being constructed at Iloilo, on the Island of Panay, had not been completed, and to have made the trip by air would have necessitated a landing for gas and oil at that place.

The trip on the *Pompey* was not without its thrills, however. Steaming south through the many islands which infest this country, beautiful scenery was afforded. Friday morning, December 7, the steamer pulled into Cebu, on the Island of Cebu, which is full of historic interest—the place where Magellan lost his life, etc. The Air Service personnel were shown the town, the Leper Colony, and points of interest in the town's clubs.

On Sunday morning at 6:00 a. m., the *Pompey* was docked at Zamboanga. Major Allen S. Fletcher, commanding Pettit Barracks, met the Air Service Officers

and handed them the keys of the town.

The Major brought along forty Scout soldiers, and by 7:30 all planes, machine guns, and other supplies were unloaded and on the way to the landing field. By 5:30 p. m., two planes were set up and on Monday the third plane was set up and ready for test.

The Zamboanga Carnival, the first of its kind in the Southern Islands, was well under way. Pettit Barracks had been turned over to the Carnival Association for carnival grounds. The streets thronged with Moros from

Jolo, Basilan, Lanao, and other provinces. The various costumes, wide trousers of black, pink, and blue; tight-fitting trousers of red and yellow; short jackets bedecked with gold buttons, vividly colored sarongs worn by the Cotabato and Lanao Moros, bright headcloths, the fez and the wide sun hat presented a most unusual spectacle. Zamboanga itself, a beautiful little city, with white stone buildings and clean streets, flanked with palm trees and tropical plants, made an ideal setting for the Carnival.

The landing field was located on the fairway of the Zamboanga Golf Club and was approximately 400 yards by 75 yards in dimension. The flight was provided with guards for the planes, tents for supplies, and racks for

the oil and gas drums. Major Fletcher went so far as to cut down a large tree in order to provide a better approach in landing. Transportation was always ready for the officers and men of the flight and the fullest cooperation was given.

The Overseas Club and Zamboanga Golf Club provided guest cards for the officers and everything possible was done to make the trip most pleasant.

Daily reconnaissance flights were made in and around Zamboanga. The officers of the post and Pettit Barracks were afforded the opportunity of flying over the moun-



Official U. S. Army Photo

Montalban, the mountain stream which furnishes Manila's water supply.

tains and jungles north of Zamboanga in order to check over proposed routes for ground reconnaissance.

On receipt of authority from Department Headquarters, at 6:30 a. m., Sunday morning, two planes took off for Camp Keithly, a Constabulary Camp in the province of Lanao, some 170 miles northeast of Zamboanga. Flying over Sibugay Bay, a water hop of sixty miles, over trackless jungles and a number of beautiful lakes, a landing was made at 8:50 a. m. by the first plane, which carried Lieut. Gullet. Lieut. Walker landed a few minutes later. The field was not one of the best—about 375 yards long “sway backed” and lying perpendicular to the wind—but as it had been cleared off in two days by Moros armed with bolos it was a work of art.

The Provincial Governor (Major Santos of the Constabulary) met us at the field. About 1,000 Moros, who had never seen a plane before, were at the landing field, looking with wonder at the “Great Birds.” The Governor informed the pilots that when he had informed the Moros that airplanes would land on the field that was being prepared, the majority were very skeptical. Major Fletcher, who had been in that country in the early days, and who could speak the dialect fluently, was greeted with enthusiasm by the Moro Datus (chiefs). He was asked by one old Datu: “Did you see Heaven?” The Major jokingly replied, “Oh, yes!” “Why didn’t you go there?” That was a sticker, but Major Fletcher replied, “We didn’t have gasoline enough,” which seemed reasonable enough to the Moro. Questioned further by the Datu as to the appearance of Heaven, Major Fletcher replied that all he could see was a white haze. He was afraid to carry the joke further, for the Mohammedan belief is that a bevy of forty virgins await every “True Believer” at the pearly gates and a certain way

to enter Heaven to kill a Christian. The Major said that had he informed the old Datu that he had waved to the Forty Virgins, the latter would have pulled out his Kampilon and started hacking in order to insure his entrance—or at least such a possibility existed.

Camp Keithly is situated on the north shore of Lake Lanao, a lake about twenty miles long and twelve miles wide. General Pershing was formerly in command of the station when it was a Regular Army post. The Moros in that region farm, weave, and make articles of gold, brass, and silver. The men usually wear the sarong as a skirt and their headcloths in a style peculiar to that region. They are usually well built, very dignified, and their bravery made them a difficult foe for the Americans to cope with in the early days. They were all especially glad to see the Americans and were eager to inform the American officers of their greatest respect for all things American and their hope that the United States would retain the government of the Islands. They heartily dislike the Filipinos, and at the time we landed some forty Moros, under Datu Pata, had gathered in a little cotta (fort) on top of a hill and defied the Insular Filipino Government.

ON Monday the pilots and Major Fletcher, accompanied by Governor Santos and Major Livingstone, drove by auto to see the Maria Cristina Falls. The falls are 312 feet in height. Leaving the Falls, the trip was continued to Camp Overton (Constabulary) and back through a deep canyon matted with tropical foliage. Arriving late in the afternoon, it was learned that sixty Constabulary soldiers had attacked the cotta across the lake and had killed thirty-one Moros, of whom it was reported eighteen were women and children.



Miambung, Jolo, Philippine Islands.

Official U. S. Air Service Photo



1. Manila
Manila Hotel in Center.



3. Manila Carnival, showing
Manila Bay in the dis-
tance, a well-known scene
to thousands of U. S.
soldiers, sailors, marines,
and Air Service troops.



Official Photo, U. S. Air Service, Released Exclusively to Slipstream
2. Landing Field, Manila.

THE following day a motor boat was provided and the pilots were given an opportunity to visit the scene of the fight on the previous day. After wading for forty-five minutes through mud and rice paddies, the cotta was reached. It was located on a little conical hill about one hundred feet in height. The walls of the cotta were of dirt and the enclosure was about thirty feet high. It was learned that the Moros were armed only with Kampilons, Barongs (Moro knives), and two old brass cannon which had been fired when the Constabulary were well out of range. About twelve feet below the parapet and on the outside of the cotta a shallow trench had been constructed. Thirteen Moros, armed only with knives, had lain in that trench until the Constabulary soldiers started up the north side of the hill from where the attack had begun, and then leaped out and charged the sixty Constabulary men, who were well armed with rifles. Needless to say, each Moro was hit a dozen times before he had made two steps. The Constabulary men continued their advance toward the cotta, climbed the wall, and drove out the surviving Moros.

On Thursday morning the two planes took off and flew south on the east coast of Lake Lanao and south sixty miles to Cotabato, the capital of the province of Cotabato. The jungles over which we flew appeared from

the air to be impassable and it can be readily seen that the average speed of a mile an hour through the underbrush and thick tropical growth would be good time indeed.

Arriving above Cotabato, the planes turned west and, hopping over two stretches of water, about eighty miles and sixty miles, respectively, arrived at Zamboanga. The water jumps were safe to a great extent. Moro fishing vessels ply the waters, but a feature of the entertainment provided the pilots was scores of sharks and it sometimes appeared a long way to land. Life preservers make a nice target for a shark—sort of bull's-eye to aim at.

During the trip data was jotted on emergency landing fields, places that appeared from the air to provide excellent area for permanent fields if the need for them ever arose. While at Lanao the Governor estimated that some 15,000 Moros had come in to see the planes, and the moral effect of American Army planes in that troubled area was excellent.

The Carnival was in full swing when the planes returned, the bay was thronged with Vintas (native boats equipped with outriggers), and the town was crowded. That afternoon Governor-General Wood ar-

rived in his yaeht, the *Apo*, from a trip to Java. Two planes flew out to meet the General and, dodging the black and white sails of the *Vintas*, flew alongside the *Apo* and waved greetings to the passengers. Crowding the pier were at least 500 Moros, who welcomed the Governor-General with cries, "Viva General Wood!" "Viva No Independeneia!" That evening the crowning of the "Suktana" of the Carnival was staged again at the auditorium for the entertainment of the General and his party, and many interesting native dances were given.

Daily reconnaissance flights were made. The pilots had exceptionally good fortune, the only repairs neecessary being the ehanging of a propeller which had hit an iron rod marking a tee on the golf course. On Sunday a parachute jump was made for the entertainment of the people attending the Carnival.

Results of the Miami Air Races Miami, Florida, March 7 and 8

MIAMI CHAMBER OF COMMERCE CUP RACE—The first event on the program for civilians, free for all over a 93.2 mile course—six laps. The entries consisted of a number of privately owned seaplanes as follows:

Pilot	Piane	No.	Engine	H.P.
Harry Rodgers	Curtiss Seagull	1	Curtiss C-6	160
William Reagan	Curtis Seagull	2	Curtiss K-6	150
Edward Keddy	Curtiss MF	3	Hispano-Suiza (?)	150
Cliff. Webster	Curtiss Seagull	4	Curtiss K-6	150
Arthur Chalk	Aeromarine 39-B	5	Wright E	180

Winner, First Prize, \$500—Pilot Chalk, flying the Aeromarine 39-B.
Winner, Second Prize, \$200—Pilot Rodgers, flying the Curtiss Seagull.
Winner Third Prize, \$200—Pilot Reagan, flying a Curtiss Seagull.
Winner, Fourth Prize—Pilot Webster, flying a Curtiss Seagull.
Speed of No. 1, 69.6 miles per hour.

ROYAL PALM BOMBING CONTEST—The second event of the first day. Entries were as follows:

Pilot	Bomber	Plane	No.	Engine	H.P.	Entrant
Lt. Harrell	Lt. Finch	F5L	7	2-Liberty	2-360	U.S.N.
Lt. Com. Ramsey	Lt. Compo	F5L	7	2-Liberty	2-360	U.S.N.
Lt. Murphy		HN2		Wright J-1	200	U.S.N.
Lt. H. L. George	Capt. R. B. Hough, Jr.	Martin Bomber	14	2-Liberty	2-400	U.S.A.S.
Capt. E. E. W. Duncan	Lt. H. A. Craig	Martin Bomber	14	2-Liberty	2-400	U.S.A.S.

Winner, First Prize, the Royal Palm Bombing Trophy—Captain E. E. W. Duncan and Lieut. H. A. Craig.
Winner, Second Prize, Silver Loving Cup—Lt. Harrell and Lt. Finch.
Winner, Third Prize, Silver Loving Cup—Lieut. Commander Ramsey and Lieut. Compo.

FLAMINGO HANDICAP TROPHY RACE—First event of the second day representing a handicap race of 200 km. (124.27 mi.) or eight laps of 25 km. course, for navy pilots only. The following were entries.

Pilot	Plane	No.	Engine	H.P.	Entrant
Lt. Com. Ramsey and Lt. Compo	F5L	6	2-Liberty	2-360	U.S.N.
Lt. Harrell and Lt. Finch	F5L	7	2-Liberty	2-360	"
Lt. Martin and Lt. Keene	F5L	8	2-Liberty	2-360	"
Lt. Richard	HN2	9	Wright E-3	180	"
Lt. Grant	VE7H	10	Wright J-1	200	"
Lt. Sprague	TS1	11	Wright J-1	200	"

Winner, First Prize, Flamingo Handicap Trophy—Lieut. Richards, 1:16:45.83-97.05 mi./hr.
Winner, Second Prize, Silver Loving Cup—Lieut. Harrell and Lieut. Finch. 1:36:39.2-77 mi./hr.
Winner, Third Prize, Silver Loving Cup—Lieut. Martin and Lieut. Keene, 1:37:13.66-76.65 mi./hr.

CURTISS MARINE TROPHY RACE—The final event of the second day represented a time race over a distance of 200 km. (124.27 mi.), eight laps of the 25 km. course. The entries and order of start were:

Pilot	Plane	No.	Engine	H.P.	Entrant
Lt. Murphy	HN2	8	Wright J-1	200	U.S.N.
Lt. Grant	VE7H	10	Wright E-3	180	"
Lt. Sprague	TS1	11	Wright J-1	200	"
Lt. Harrell and Lt. Finch	F5L	7	Liberty	2-360	"
Lt. Com. Mason	CS1	12	Wright T-2	520	"

Winner, First Prize, \$1,000—Lieut. Grant, 1:4:11, 18-116.1 mi./hr.
Winner, Second Prize, \$300—Lieut. Sprague, 1:12:39.14-102.2 mi./hr.
Winner, Third Prize, \$200—Lieut. Murphy, 1:12:59.57-102 mi./hr.

Heath Ships to Enter On-to-Dayton Air Event

The Heath Airplane Company, of Chicago, Ill., has started work on three ships to be entered in the "On-to-Dayton" event in connection with the International Air Races here, October 2, 3, and 4, it was learned recently.

One of the entrants will be the Heath Favorite which won third place in the "On-to-St. Louis" race last fall. It has been dismanteled and is being improved in an effort to make a still better showing this year, officials reported.

The second machine to take part will be the Heath Feather, a sport airplane equipped with a motor-cycle engine. A six-passenger commercial airplane equipped with a Hisso motor will be the third ship to represent the Chicago concern.—Dayton Herald.

The N. A. A. announces that a new World Record has been established and recognized by the F. A. I., as follows:

Class C-1 Seaplanes, with useful load of 250 kilograms. Altitude—(France) J. F. Laporte, F. B. A. Seaplane, Hispano 180 H. P., at Argenteuil, March 24, 1924, 12,336 feet.

It is gratifying indeed to note that the small manufacturers of commercial aircraft are finding a ready market for their product without bothering around Washington.

Recent communieation from the Lincoln Standard Aircraft Corp., of Lincoln, Nebraska, and from the Swallow Acroplane Mfg. Co., of Wichita, Kansas, bear an atmosphere of enthusiasm and optimism which was not at all present a year ago. It is quite pleasing again to find in our recent mails the following letter from The Advance Aircraft Company of Troy, Ohio, manufacturers of the "Waeo," popular three-seater:

Editor Slipstream:
Dear Sir:

Due to a strenuous period of making deliveries of ships, we have been unable to do justice to the matter of which we spoke recently. The writer is leaving for the East for several days concerning a sale and will see you upon returning to the city.

Yours very truly,
C. J. BRUCKNER.

Major William R. Blair, signal corps officer at McCook Field, left Dayton recently under orders from the Chief of Air Service to assist the round-the-world flyers in obtaining meteorogical information while flying over the district of the northern Pacific. Major Blair will proceed from Seattle to Dutch Harbor, Unalaska. From Dutch Harbor he will continue on to Chicagoff, on the Island of Attu, the last landing place before the flyers hop off for the 890-mile flight to Shismuski.

SAFETY IN AVIATION

A Satire on Freak Aircraft

By W. F. Gerhardt, *Flight Research, McCook Field*
(Inventor of the Cycleplane)

ONE of the most insistent and difficult problems confronting the aeronautical engineer is the problem of safety. In military aviation it is a question of making a fighting plane such that will recover easily from any position in which it is put and

be strong enough to stand the forces induced. From the commercial standpoint safety is found in a machine which holds successfully normal flying altitude and strong enough to carry the heavy loads.

It is, then, of unusual interest to discover that absolutely safe aircraft have been developed. It is at the same time a bit disconcerting to find that the solution has been made outside the aeronautical world, in some cases outside the engineering profession.

But then did not aviation have its inception in the mind of a Greek architect, one Daedalus, who, it is related built wings of wax and escaped, via the starry blue, from the clutches of the Cretan tyrant? And did

not his son, provided with the same apparatus, make an altitude record, as yet unbroken, even at McCook Field, when his proximity to the sun was such that his wings melted? Consequently in modern problems we need not be astonished to find progress in aeronautics

outside its domain.

For example, let us consider several military proposals invented in the stress of the recent war. The present intense interest in the bombing of navies directs our attention first to the giant offensive weapon of Fig. X. (We have used the latter end of the alphabet as the value of the apparatus is as yet unknown.) What could be more desirable than a huge boat-shaped helicopter which would rise from the water without a rapid forward speed, dart to

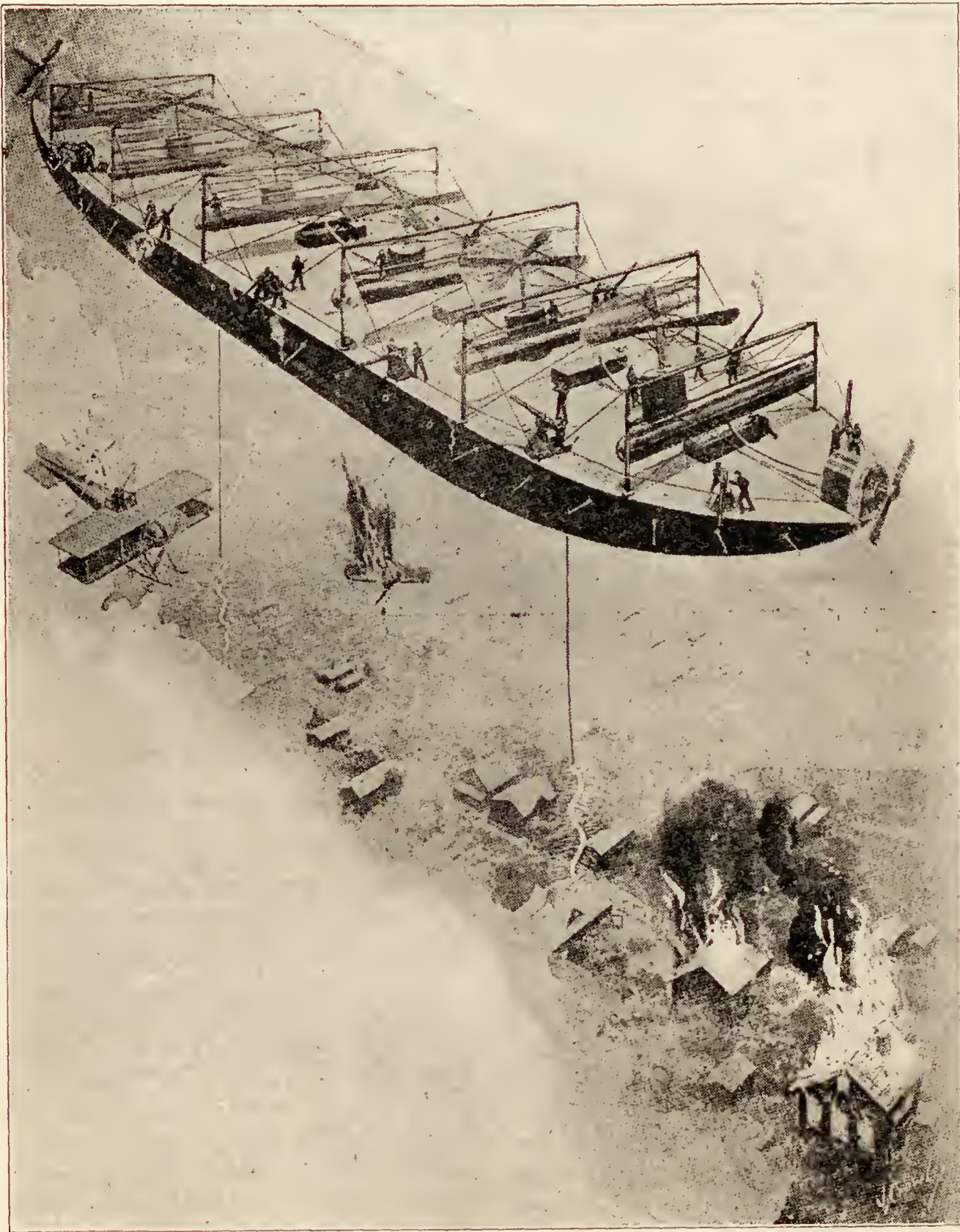


Fig. X.

the enemy's fleet, hover over them and with some uncanny means, as the canned lightning here shown and utterly destroy the whole of it? Why not indeed provide large roomy decks, where the crew may move

about with ease and comfort, operating the heavy siege guns, discharging the five tons of bombs carried? Nothing prevents, according to the inventor, a siege gun expert.

A few queries about the apparatus, as here represented, demand attention. Why should the blast from the lifting propellers be deflected horizontally by the decks, thereby giving zero useful lift? Or why again put the lighting tanks perpendicular to the direction of motion, when by placing them longitudinally the resistance offered to forward motion could be reduced three or four times? If, however, we forget questions of this character, we are prepared to admit that here we have the potentialities for putting an early end to navies, and making war brief.

SPEAKING of a speedy termination of war, we are impelled to glance at Fig. Y where in perspective sketch is shown the idea conceived by a Professor of

Gravity. She has consented, although it is "a bit sudden," to be his partner in this humanitarian scheme to "end the war in thirty days, and bring back all our boys safe and sound."

Summing up the rather hazy description of the apparatus, we can say that it is not subject to the limitations of propeller driven machines. It will do 300 per on the straightaway, and probably twice that much on the "swoop," which is according to the professor, its favorite (and to some humble minds only) maneuver. The plans were presented to the Government, but for some unknown reason were not approved. Surely a prophet is not without honor, etc. We are sure Germany would have been delighted to have thousands of these formidable machines built (by us).

BUT we must not pause too long before considering yet the more promising forms of aircraft, which must be described in more detail. It is of the leviathan

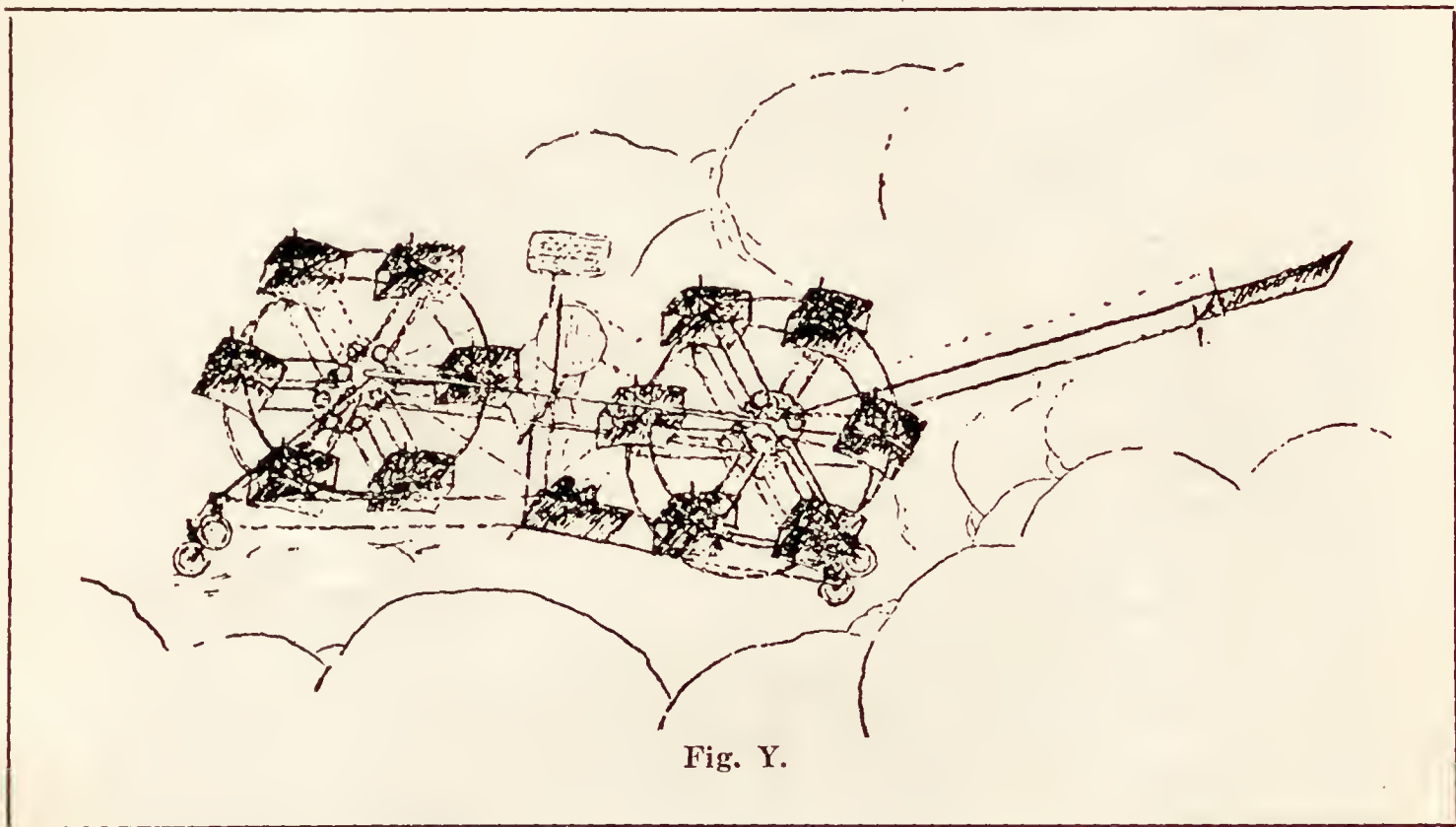


Fig. Y.

Greek and Ancient History. No, we do not have here twin progeny of the old mill wheel of sacred memory nor yet a double order of Ferris Wheel; merely the craft which was to have ended the late war in thirty days.

In a brilliant little pamphlet from which this cut was taken the author does several things in addition to describing the "eyclone." He first classifies aircraft into four classes. The first is the lighter-than-air machines, of which he cites the bee as a natural prototype (a hint to the biologist as to a new species of insect); second, comes the airplane; third, the helicopter; and fourth, "his class," namely, machines propelled by gravity. These he frankly admits are the most important. From classification he proceeds to elucidation of the principle of aeronautics. In wonder we read the tale of how he has won that elusive maid so long wooed by perpetual motion enthusiasts—Mlle.

of Fig. Z that we speak. The inventor had complete drawings, plans, specifications—the work of himself and a staff of engineers for two years—everything in readiness for quantity production.

This mammoth of the air measures 365 span and 225 length, and weighs 250 tons gross. Its power plant consists of seven units totaling 28,500 H. P., which drive seven sixty-foot propellers at 2,500 R.P.M. Two of the screws are horizontal, and when necessary support the entire weight, thus enabling the machine to hover, while the others drive the craft forward with a modest velocity of 500 miles per hour.

Enough fuel can be carried to last 65,000 miles, from which we see that it is possible to encircle the globe two and one-half times in eleven days. Complete equipment is carried, of course, such as sleeping accommodations, baths, showers, reading rooms, promenade deck and so on. There seems to be no good reason

why a swimming pool, tennis courts, and golf links were not included in the list. The crew necessary to man the vessel is quite large, and—owing to Union regulations—works in three shifts of eight hours each.

The advantages of this scheme are apparent. But again the questions. What about the propellers, whose tips will be revolving, if our arithmetic erreth not, at a velocity of 5,500 miles per hour? Would not the "cavitation" which occurs in the flight of shells going at half that speed, destroy any useful aerodynamical properties the screws might otherwise have? Indeed would there be a propeller there to rotate, after the centrifugal forces had finished tugging at the hub?

lapse of the earth when the gauzy winged creature flits thereto. But why shouldn't the inventor be solicitous of the earth? He is a mining engineer.

FINALLY we must observe what pure art has to offer us in the way of solutions to our aeronautical problems. Witness Fig. W, where an aerial navy sweeps ethereal space, according to the vision of the artist.

Surely we might here have raised our hopes high in expectations of the radical and the dreamy. Not so! Bound by tradition to the earth's surface, he still adheres to Marine practice,—yes, to shapes and outlines that would have delighted Norse seamen. We take

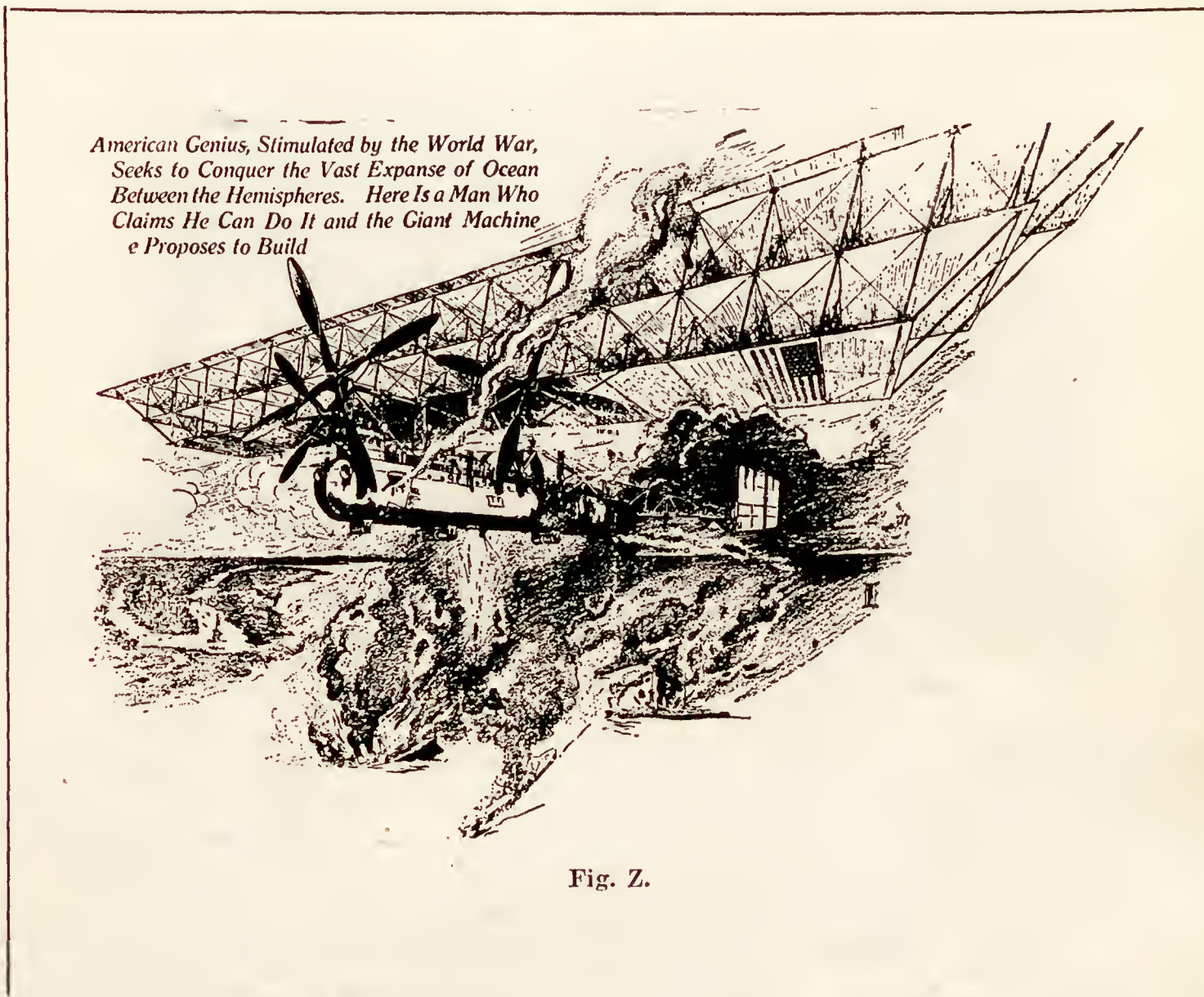


Fig. Z.

Again, why make the gap chord ratio of the wings one-third when it is this condition that the blanketing effect of one plane on the other is extremely large?

Civil engineering practices seem to have captivated the inventor, in the design of some parts. The artist unknowingly has improved things. The interplane struts are not stream line as shown in the sketch, but are built up of four angle irons tied with lattice work; the idea is, no doubt, to prevent the craft from running too fast, and certainly these resistance producing elements will act as excellent brakes. The resilient landing gear is also to be noted. It consists as can be seen, of six conventional tennis court rollers, the large bearing areas of which no doubt intended to prevent the collapse in particular of the graceful stern that is just

disappearing at the right of the sketch. No, it must after all be a prow, according to the direction of the streaming flag, and the guess that the gas pipe there visible is the motor exhaust must be revised to read fog-horn.

Even the size of the propellers and control surfaces indicate a naval prejudice. Perhaps the creator expects to make them effective by spraying water in advance of the craft? But then imagination is an essential factor in the interpretation of art!

For the benefit of those who may be asking for some verbal reference to the title, if only to satisfy the laws of composition, we might record the obvious fact that

(Continued on Page 26)

CHICAGO'S FUTURE AVIATORS

DAYTON eitizens will recall the intense interest manifested by the great number of boys and girls who took part in the *Slipstream* Model Plane Building Contest staged during the fall of 1923.

Over 150 young aviation enthusiasts took part in the popular contest. As a speeial incentive the youthful airplane builders were offered a number of prizes to winners. Along with quite a list of merchandise prizes donated by Dayton merchants, three beautifully engraved silver trophy eups were presented, one each to a winner

It was Kenneth Boren, of Dayton, who won the first prize, but when Lieut. Maeready shook the hand of each youngster and told him to keep up the good work, it is quite within bounds to assert that he experienced "the thrill that eomes once in a lifetime."

THE announcement of the wide interest shown in the *Slipstream* Model Building Contest was received with mueh interest by schools and Aero Clubs of other eities which were planning similar eontests to help ereate



Chicago youngsters building model airplanes at the Y. M. C. A. headquarters. These young air enthusiasts will participate in the International Races.

by the internationally famous U. S. Army Aviators, Lieuts. John A. Maeready, Oakley G. Kelly, and Russell Maughan.

The Metropolitan Company, of Dayton, Ohio, a widely known clothing firm, offered their store as a headquarters for the eontest and the prizes and winning models were displayed in the various downtown store windows.

The evening on which the prizes were awarded was an inspiring event to the young plane builders, for no less a personage than Lieut. John A. Macready, the famous aviators who with Lieut. Kelly flew with the Fokker T-2 from Long Island, New York, to San Diego, California, without a single stop en route, and who at that time was the holder of the world's altitude record, was there with T. C. McMahon, Chief of the Teehnickal Data Section of McCook Field, and R. J. Meyers, foreman of the Wood Shop of the same big army post, to deeide the winners and present the prizes.

There were among the beautiful models on display, miniatures of the Barling Bomber, Curtiss Racers, Fokker monoplane Transports, "Jennys" along with various new designs which showed unusual skill and originality on the part of the young builders.

interest in aviation among the youth.

Chicago especially awakened to the possibility offered in a eontest of this kind and representatives of the Ex-eutives' Club of that eity direeted communication to the editor of *Slipstream*, asking for details in the meth-od of condueting the eontest.

Interest in miniature airplane building in Chicago was also heightened with the winning of the Mulvihill Trophy by E. G. Lange, 17-year-old president of the Illinois Model Aero Club. In addition to winning this honor at the St. Louis International Air Raees, young Lange established a new world's reeor for toy models with a flight of four minutes and twenty-two and four-fifths seeonds.

Aetivity among the Chieago youngsters in model air-plane building is now at high pitch with a miniature airplane tournament scheduled for May 10 at the Municipal Pier.

"More than five hundred girls and boys of ages varying from 7 to 17 will eompete in this eontest," writes Terence Vincent, chairman of the big event, to the editor of *Slipstream*.

"There is tremendous faith in the present and future of aviation evidenced among the youth of this city, although as yet no Junior Flying League of the N. A. A. has been organized. Hundreds of boys and girls are making and flying miniature airplanes just for the pleasure it affords. (It seems there is some aversion expressed toward the N. A. A. through the failure of the contest committee to deliver the Mulvihill Trophy.

However, Civic clubs of important caliber are co-operating in every way to make the tournament of May 10 a success. Prizes vary from splendid loving cups to ribbons, food, medals, and certificates.

Other cities, attracted by the unusual interest and preparation being put forth have sent word that they will compete for the prizes by flying their planes before special observers and wiring their results to the Chicago Tournament Director. The final results of the tournament will be broadcasted by radio from a powerful Chicago station.

GLITTERING spangles from ladies' gowns and wee beads from Indian moccasins are in demand by the miniature airplane builders, who utilize them as "bearings" for each diminutive propeller that drives or pulls the plane.

Many of the miniature entries are now on display in

the auditorium of Mark White Square, and a great crowd of youngsters assembled recently to witness a number of preliminary trials under the guidance of R. V. Pierce, Chicago Park Director.

Most of the diminutive models are designed after conventional commercial and military types while, of course, a number of entirely original designs are worked up by the youngsters. John Rappold, instructor of the Central Lions Club classes in miniature airplane building, has worked out an original commercial design to enter in the Chicago Daily News contest.

Genevieve Lubersky, 13-year-old Chicago miss, is the only girl in the city to make and fly a miniature airplane. She has a twin pusher type plane and a single propeller tractor. She has three brothers entering the tournament.

The little planes built by the Chicago youngsters are genuine marvels of youthful skill. Various material is used in the construction, with extreme care being exercised in gaining lightness and balance. Japanese tissue is generally used as wing and fuselage covering, while Balsa wood, an extremely light, porous species of timber found in Central America and now undergoing experiment in Government Aircraft and propeller construction, is used by the more or less expert model builders

(Continued on Page 24)

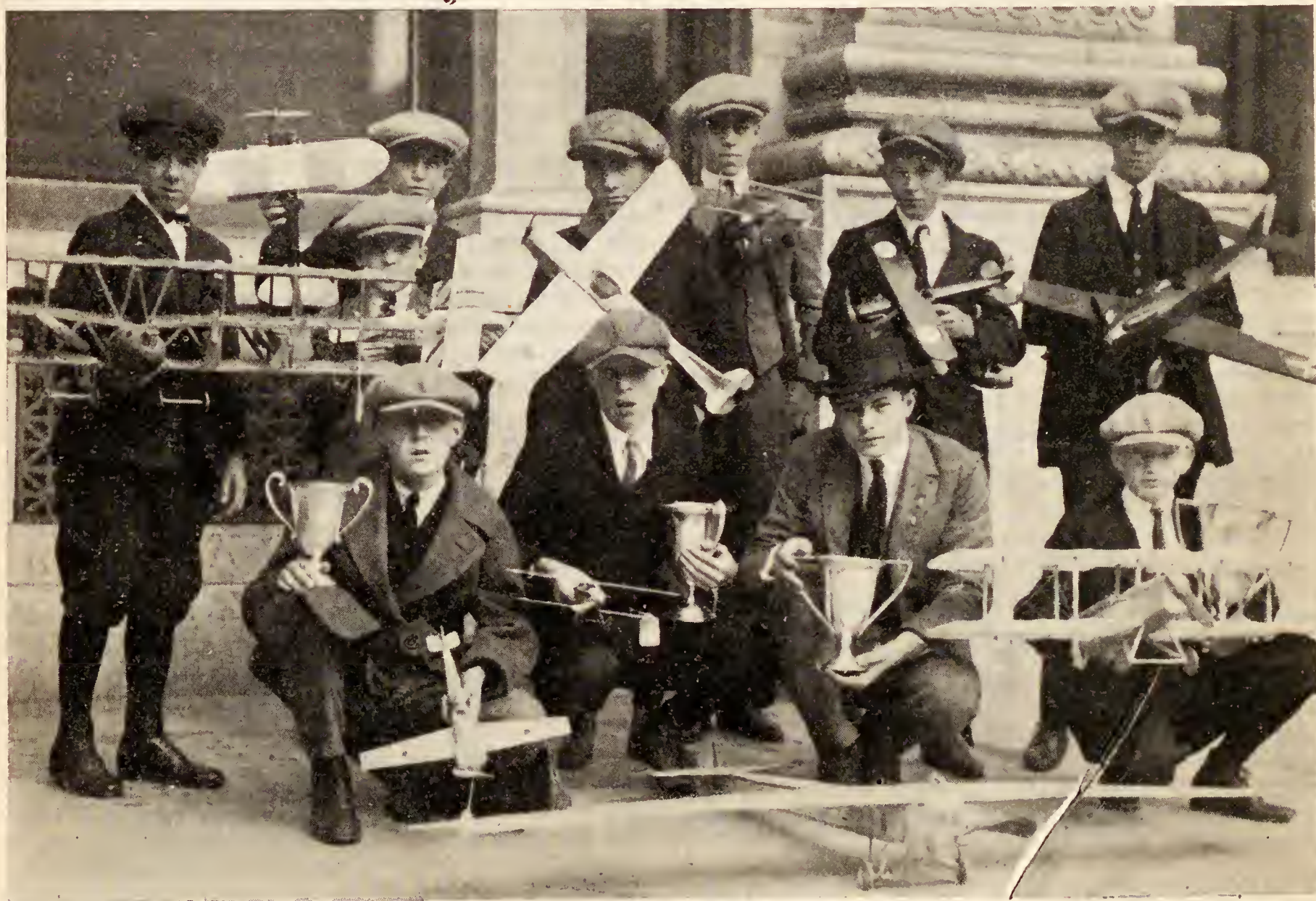


Photo By Mayfield

Prize winners in the popular Airplane Model Building Contest conducted by the "Slipstream" Magazine.



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VOL. 5.



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Fred F. Marshall, Lieut. O. R. C. Editor and Business Mgr.

ARMY-NAVY AIR COMBINE

Some weeks ago Major General Mason M. Patrick, Chief of the Army Air Service, presented his views to the House Naval Committee on the proposed linking of various activities of the army and navy air forces.

One of the points discussed most freely was the possibility of combining the army and navy experimental stations, to effect a saving. A consolidation of this kind, if carried out, would mean, of course that either all navy engineering and experimental work would be done at McCook Field or that McCook Field would be removed to a point in proximity with the naval experimental station.

A greater part of naval experimental work is now carried on at Philadelphia. It is known that a strong element in the Air Service has been working to get the Dayton air post moved to this new location rather than to the new site recently presented to the Government by Dayton citizens.

However, it develops that where the eastern site may possess certain outstanding features in favor of naval experimenting, it is limited considerably in good points for the army engineering work. The Dayton site is generally conceded to be one of the finest and best situated from the army standpoint, while a plan is now under way to form a large inland lake over the Miami Flood Conservancy district, which is partially incorporated in the new site and which would furnish the means necessary for naval experimenting. It is said that by simply closing the conduits at the great Huffman Conservancy Dam, a lake covering the thousands of acres of restricted lowland would be formed.

IMPORTING BY AIR

Gradually distance is being cut down by the use of aircraft. One of the latest practical demonstrations in this connection is shown by the use of an airplane as an auxiliary to steamships in ocean transportation of freight.

The Admiral Oriental Line has just put into operation a special seaplane service inaugurated by the post office. Planes meet the incoming silk laden ships from the Orient at Victoria, eighty miles from Seattle, and take off the mail bags for Seattle in time to catch the train for New York a day earlier than possible before.

This is of great value to silk importers who had suffered delays in getting their silk because of being forced to wait for the necessary documents. The papers will now arrive

about twenty-four hours before the silk. Silk is carried at a high tariff and gets precedence on the railroads.

FACTS ON AIR MAIL SERVICE

We have an Air Mail Service, but how many people utilize its advantages. Possibly few people know how to use the opportunity offered.

Of course, since the Air Mail Service is limited to certain sections, the principal line running between New York and Chicago, via Cleveland, there would be no advantages in the way of time saving to use the Air Mail unless the destination of the mail lies in the immediate zones affected by the service.

There is no additional cost in the postal rates of the Air Mail, and it is only necessary for patrons wishing to have their mail expedited by mail planes to frank the mail matter with the notice—"Expedite by Air Mail," or "Via Air Mail."

No doubt, any special influence instituted to urge the public to use the Air Mail would swamp the service with its present limited facilities. Upon the other hand should the public call upon the Air Mail Service more often it might help to impress the Government with the need of more adequate equipment to cope with the situation. The wider use of the Air Mail will tend to prove the feasibility and need of the service the absolute necessity for more equipment.

POINTING THE WAY FOR NIGHT FLYING

With the air mail pilots setting new transcontinental records, it is interesting to read a description of one of the chief mechanical aids to night flying, the thing which has enabled the schedule to be so greatly reduced.

George F. Paulin, in St. Nicholas, tells how valuable the lighted ground wind-indicator is in night flying:

Any invention that helps the aviator to make a safe landing at night is of great importance in the development of night flying. To this end, there has been developed a unique invention known as the ground wind-indicator, which gives the aviator both the direction of the wind and the location of the field. In order that it may not interfere with landing, it is erected just off the actual flying field, the limits of which are indicated by smaller, flashing beacon lights. All are operated on the same principles as marine beacons and lighthouses. They are automatic, and will burn for a period of several months without requiring any attention.

Several novel features are embodied in the ground wind-indicator. It is built in the form of a letter T, according to the style internationally agreed upon for the indication of landing zones. It can thus serve both as a day and a night indicator. In shape it looks like a small airplane. It rotates automatically, so that it will always be headed to the wind.

The direction that the ground wind-indicator is pointing can be distinguished by the aviator while he is still at a distance of several miles from the landing-field. A uniform plan can be followed by having the ground indicator always placed in a certain direction from the flying field, which will also help to guide the flyer.

This indicator may be called a combination marine light-house and dummy airplane with aluminum wings or vanes. It is equipped with an ingenious device called a "sun-valve." This automatically turns it off in the daytime, and at the approach of night, turns it on. It is by the use of a similar device that marine lights off the coast of Alaska have, in many instances, been kept operating for two years without any attention.

British Officer Praises American Sporting Spirit

The Advance Officer for the flight around the world to be undertaken by Great Britain, Lieut.-Colonel L. E. Broome, late of the Royal Engineers of the British Army, stopped in Washington en route to Vancouver, from which port he will make the 6,000-mile trip by boat over the Pacific route of the British world flight. He will join the airplane at Yokohama, Japan, and fly back to Vancouver over the route he will have just sailed.

Before leaving Washington, Col. Broome expressed his deep appreciation to General Patrick, Chief of Air service, for the co-operation extended to him and communicated the following to the Associated Press:

I would like very much before I leave Washington for Vancouver to express my great appreciation and admiration for the extremely friendly and sporting spirit shown towards our proposed flight around the world by the various departments in Washington with whom it has been my good fortune to come in contact, with a view to exchanging information and data in regard to the crossing of the Pacific Ocean in particular and the flight around the world in general.

After a very busy two days, I have come to the conclusion that I have got distinctly the best of the bargain. My Embassy soon put me in touch with the proper United States authorities and I have to thank Mr. Denby, the Secretary of the Navy, Admiral Moffett and his staff, who have supplied me with much information and given me letters of introduction which will be of great use on the route.

For the Army who are principally concerned, I have to thank Maj.-General Patrick and his Aide, Maj. Frank, who put me in touch with the personnel who are doing such splendid work in organizing the United States flight as a whole. Yesterday I was flown to Langley Field, where it was my privilege to meet Major Martin and the officers who will actually make the trip and who not only showed me one of the planes, but took me up in it and gave me a chance to see the splendid work and scientific thought which has been put into its construction.

Admiral Billard, Chief of the Coast Guard Service, has given me letters which will be of greatest assistance wherever his revenue cutters and personnel are to be found.

All this kindness and splendid sporting spirit were in return for the gift which I gladly made of the map and general information concerning the Pacific route which I have had in preparation for the last two years.

I contend that this is the proper and fitting way to ap-

proach the great enterprise which both our countries have in view. The healthy rivalry of a race through the air around the world should surely be an event of the greatest public interest to the civilized world and of benefit to the science of aviation, progress, and fresh discoveries which mean so much at the present time. I am proud to think that it is my great good fortune to be one of the party to race against such opponents.

I leave this little message as a slight and entirely inadequate expression of thanks for the unfailing courtesy which I have received from every one during my short mission and visit in your city.

The admission price to the International Air Races will range from \$1.00 to \$3.00.

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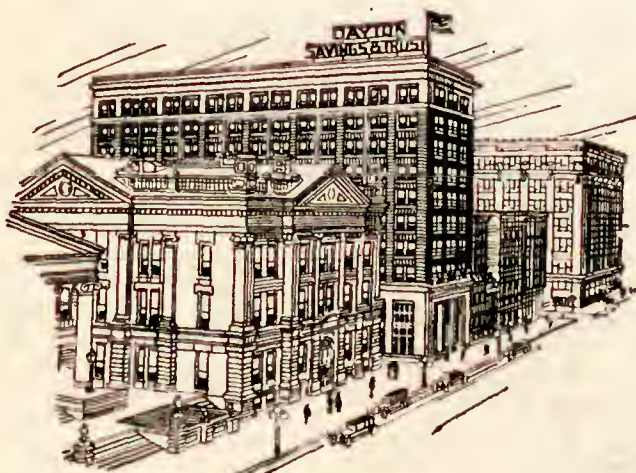
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(Continued from Page 6)

1922 and at St. Louis in 1923 have been brought in contact with similar committees in Dayton. In this fashion the experience of preceding years has been passed on. The local committees have already established the policy of preserving for next year's committees their own records. By this method it is hoped to so standardize the details that eventually a perfect "100 percent" meet is possible. In this establishing of contact between Dayton and former committees the co-operation and liaison of the National Aeronautic Association and the Aeronautical Chamber of Commerce have been invaluable.

(Continued from Page 21)

who have learned of its value. The little planes seldom weigh more than an ounce, while many weigh less than half an ounce.



E. G. Lange, President of the Illinois Model Aero Club, winner of the Mulvihill Trophy at the St. Louis International Air Races, 1923.

In 1923, Bertrand Pond, of the University of Illinois, won the city-wide duration contest with a plane weighing six one-hundredths of an ounce. With planes of such light weight it is at once to be seen that there must be an application of very exacting engineering skill to get the

right relationship of "power plant" wing area, propeller weight and pitch, and over-all weight to achieve the greatest degree of success.

Among the various other aero clubs which have sprung up in Chicago are: the Haughah School Club, the Aggassiz School Club and the Union League Foundation for Boys' Clubs.

WITH the advent of the International Air Races looming closer, it would appear that Dayton youngsters who contemplate competing for the Mulvihill Trophy and the \$500.00 in cash prizes will have to get busy if they expect to come in on the money. As far as can be learned, no other city in the country, with the exception of Chicago, and Elmira, New York, is making any appreciable effort in instigating interest in model plane building among the school children.

The *Slipstream* Model Plane Building Contest was the first of its kind held in Dayton and the large number of entrants manifested the keen interest held by the young folk toward aviation. For a time during the *Slipstream* contest it was necessary to turn over the carpenter shops in the several schools to accommodate the enthusiastic contestants.

Certainly more attention should be directed toward encouraging this interest in the younger generation. It will mean so much for the cause to keep this spirit and confidence alive until these young people take an active part in our country's business affairs.

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Kentucky Physician Utilizes Airplane

The Mayfield, Ky., *Messenger* recently printed a story to the effect that for the first time in the history of the medical profession in Graves County, western Kentucky, or perhaps the entire State, a patient was reached from Mayfield by an airplane and an operation performed on him.

Dr. E. V. Edwards, of the Mayfield Hospital, received a call from Dr. Gilliam to come to Milburn, sixteen miles west of Mayfield. The trip being almost impossible by automobile, Dr. Edwards employed a passenger airplane with its pilot and owner, and loading his instruments on board and accompanied by a hospital nurse, the airplane departed shortly before noon and made the sixteen miles in twenty minutes, due to being forced to fly against a strong head wind. The operation on the patient was performed shortly afternoon. On the return trip, the plane stepped out and made the sixteen miles in eleven minutes.

BELL MAIN 1050-J

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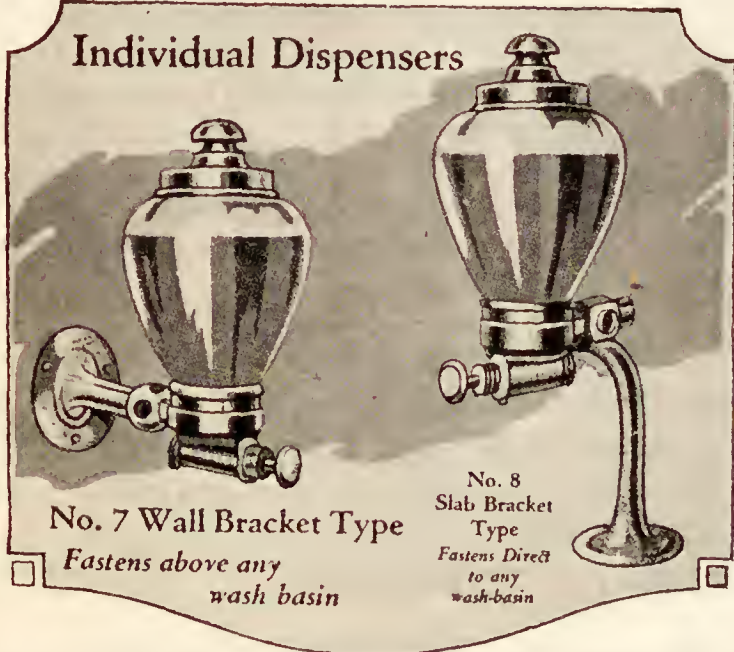
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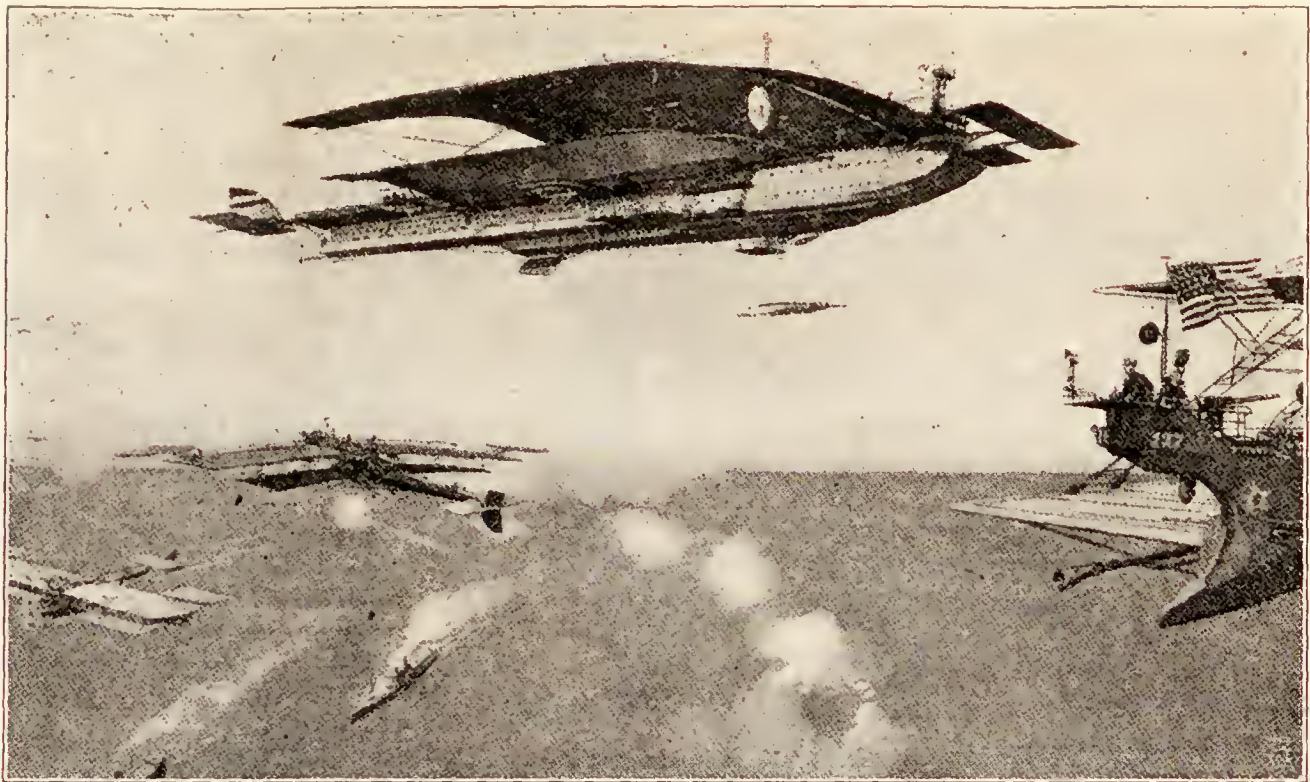


Fig. W.

(Continued from page 19)

the above machines, as designed, are as nearly safe as aircraft can be made. They can be subject to no accident while in the air, for the simple reason they will never get there. Our present day hoisting machinery is too frail.

C. H. Paul, engineer of the International Air Races, to be held in Dayton, Ohio, next October, states that special parking space for 40,000 automobiles has been staked off at Wilbur Wright Field. How to handle this enormous collection of vehicles and keep them from a hopeless traffic jumble is a huge task in itself. Mr. Paul estimated that 40,000 machines stretched out in line would extend from Dayton to Wheeling, West Virginia.

Mackay Trophy to "Mac" and Kelly

Upon recommendation of the Secretary of War Weeks and Major General Mason M. Patrick, Chief of the U. S. Air Service, the National Aeronautic Association announces the award of the Mackay Army Trophy to Lieutenants Oakley G. Kelly and John A. Macready for their coast-to-coast flight on May 2 and 3, 1923, in the Army Fokker Transport plane T-2.

The Mackay Trophy is awarded annually to the pilot

Also, for those who suspect the intimation that aeronautical ideas are limited to aeronautical circles, it might be pointed out that the foregoing just shows that from the outside has most frequently come the solution of the problem of "absolute safety."

or team of pilots accomplishing the most noteworthy flight during the year.

Wrights Honored by France

A cablegram to the French Embassy in Washington notifies Mr. Orville Wright and his sister, Catherine Wright, of Dayton, of a singular honor bestowed upon them by the French government. The message reads:

Mr. Orville Wright has just been promoted officer of the French order of the Legion of Honor, and his sister, Miss Catherine Wright, has been appointed an officer of the Instruction Publique at the occasion of the 20th anniversary of the first human flight.

Jacques Schneider Cup Race Entries

Entries for the Jacques Schneider Cup Race, which is to take place at Baltimore, Maryland, October 24, 25, 1924, closed April 1, with the following entries: United States, 3, England, 2, and Italy, 3.



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Pres. Patterson Returns

Frederick B. Patterson, President of the National Aeronautic Association, who has been visiting European countries on a mission to induce foreign aviators to participate in the International Air Races to be held in Dayton, Ohio, next October, is expected to sail for home about the middle of April. As yet the detailed result of Mr. Patterson's negotiations with the foreign air officials is not known, but Sadi Lecoq, famous French aviator and present holder of the world's altitude record, will no doubt represent France in the Pulitzer event as one foreign entry.

A delegation comprised of aviation enthusiasts and officials of the National Aeronautic Association will greet President Patterson upon his arrival in New York.

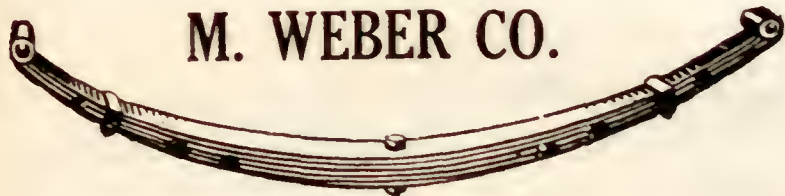
One Wheel Gone! Land Safely

March 13 started with the proverbial unlucky jinx for a pilot driving a Fokker plane out of Croydon, the English air terminal, when a wheel was lost upon taking off. The pilot did not notice what had happened since the machine had gained sufficient flying speed and was just clearing the ground. A passenger on board, however, noticed the mishap and wrote a note to the pilot. Upon second thought the passenger decided to withhold the note until the plane was about to land. In the meantime word had been sent ahead to Rotterdam and the machine was greeted upon arrival at this port with a flock of planes, the occupants of which waved spare wheels to attract the pilot. The warning was also written in chalk on the ground at the landing field. The pilot being fully warned of the damage made a beautiful slow landing with the result that the plane pulled up on one axle without a nose-over or other damage.

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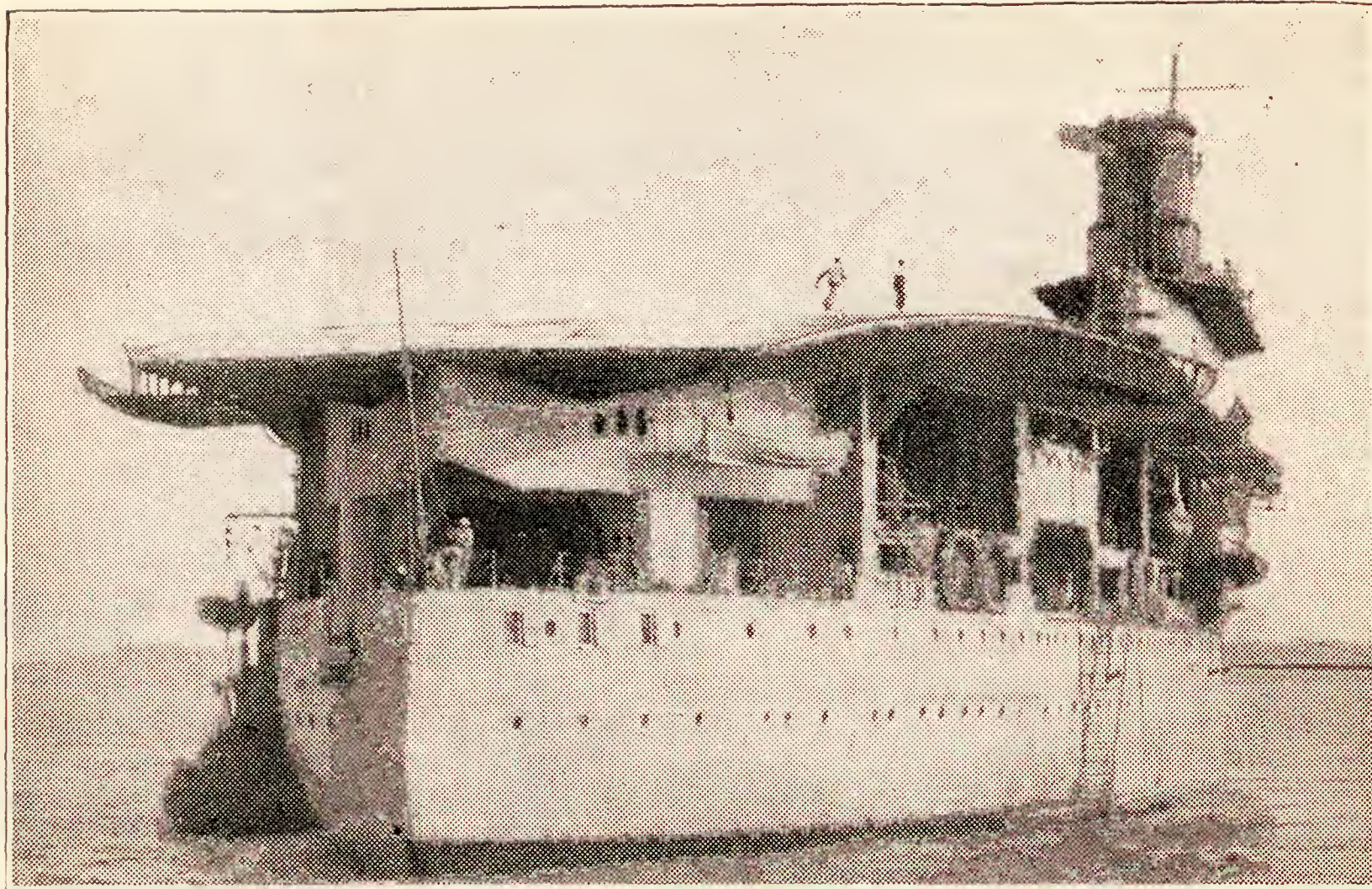
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Courtesy The Christian Science Monitor

H. M. S. EAGLE—One of the Latest Auxiliaries to Great Britain's Navy.

By adding to them new aircraft-carrying vessels, the two principal sea-going commands in the British Navy have been reconstituted on a basis which makes them the most completely equipped squadrons in the world for all-round effectiveness. They are now so composed that they can take the offensive either on the water, under the water, or in the air, as they will have with them wherever they go flights of airplanes and flotillas of submarines as well as surface ships of various classes.

Of all these units the most interesting, because the most novel, are the vessels that are employed in transporting the aircraft. The Hermes, which has been placed in the Atlantic fleet, is the pioneer boat of a new form of naval construction, being the first ship ever designed and built for the special purpose of acting as a mobile base for naval aircraft. By the new scheme of redistribution the Mediterranean fleet will, in August, become the most powerful one under the British flag, and the Eagle has been allocated to it as airplane carrier.

Both the Hermes and the Eagle look much alike outwardly, though there are essential differences. The Hermes displaces 10,950 tons and carries a few light guns for self-protection. Stretching over her from stem to stern there runs a broad flying deck which gives the ship somewhat the appearance of a huge floating barn with a wide, flat roof. Perched jauntily on the extreme edge of the flying deck amidships on the starboard side there stands a tripod mast, funnel, and bridge. These are for navigational purposes and have nothing to do with the aircraft.

The latter are stowed in hangars beneath the flying deck to which they are sent up by electric lifts. A considerable number of machines of different types are housed in the ship, which has all the conveniences of a shore aerodrome. In addition to the storage hangars there are fitting shops in which all sorts of mechanical work can be done. While the Hermes is at sea damaged planes can be repaired aboard her and

(Continued on Page 32)

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The editor of *Slipstream* has been asked to select from among the hundreds of army aviators a "type" which represents the popular conception of the clean-cut, youthful appearance of the U. S. Army Aviator.

Lieutenant W. H. Brookley, McCook Field test pilot, who is shown in the novel pose on this page, is offered as the sample of first choice.

Lieutenant Brookley, however, is a "handsome" aviator in various senses of the word, and his exhibition of a "howling finish," as the official termination of the St. Louis Air Races last fall will recall his intrepid and skillful handling of small pursuit planes.

The dismal drone of the powerful open-throttled motor, heralds the freak antics of "Brook," who with the Curtiss, or new Boeing Pursuit careens about the heavens with ever aspect of real enjoyment.

Lieutenant W. H. Brookley

(Continued from page 8)

capitulation of the enemy and an armistice was signed and our forces were ordered to proceed home.

It was discovered that the river had a peculiar method of building its fortifications, in that there was a layer of ice on the bottom of the river, a layer on the surface, and a layer in between. This very effectively stopped all ice floating down stream, thus making a dam which caused the flow of water to be diverted to the north where it went over the bank and flowed one and one-half miles inland over cornfields and roads and washed out the tracks of the Union Pacific Railroad at several points. At no place did the ice seem to be built up more than thirty inches above the surface of the river and as the ice was honey-combed to some extent, all bombs penetrated to the river bed, thus displacing the sand and breaking up the ice very effectively. None of the bombs used were dropped from an altitude in excess of one thousand feet.

It was without question due to the efforts of the Air Service that the Union Pacific was able to run trains over its main line by 4:00 a. m., March 5, as the ice formation near North Bend, which had caused the flow of water inland could not be reached effectively except from the air. If we had been notified twenty-four hours earlier of the formation of the ice gorge it is highly probable that we could have prevented the water from doing any damage whatever, as the water did not cross the railroad tracks until about midnight, March 3. We may be justified in the belief that the Air Service, by its efficient work, has secured in the Union Pacific Railroad Company a firm and powerful friend.

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Between Fourth and Fifth Dayton, Ohio

(Continued from Page 28)

new ones fitted together, so that she forms a completely equipped aircraft base, equal to meeting any emergency.

It is now an accepted axiom of naval strategy that a fleet at sea must be accompanied by aircraft to act as its "eyes," to do spotting for the gunners in the battleships and perform sundry other indispensable functions. The flying deck of the Hermes is so constructed that a considerable number of airplanes can rise from it in quick succession and alight upon it again after their work is done. In order to facilitate the landing of machines the deck has a "dip" astern so that the planes may come down easily.

In the matter of internal equipment, flying deck construction, and so on, the Eagle resembles the Hermes, but she is twice the latter's size and is a battle cruiser converted into an aircraft carrier. Before long the British Navy will be in possession of three more large aircraft carriers made out of "converted" battle cruisers and will, in so far as that class of auxiliary is concerned, be far ahead of any other navy.

Largest Known Airplane Tire

The largest known tire in the world, measuring 64 by 14 inches, is being designed at the Air Service Engineering Division, McCook Field, Dayton, Ohio. The experimental casing is of the straight side type, and because of its size has necessitated the design of a special wheel upon which to fit it. The estimated weight of the tire and wheel assembly is about 300 pounds, and the normal load is approximately 20,000 pounds, with an inflation pressure of 75 pounds in the tire. The estimated breaking load of the wheel is 60,000 pounds. The largest American tire heretofore built was 54 by 12 inches and is at present used on the Barling Bomber.



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Power for the Around-the-World Flight

The World Cruise, which has been absorbing the interest of the Air Service generally, has its special significance for McCook Field, for aside from supplying its quota of lucky flyers, it has had its share in the engineering responsibilities for the flight, upon which element, of course, the success or failure of the project must, to an important extent, depend. Not the least of the undertakings attempted in that connection has been the preparation of a sufficient number of Liberty engines, so that at no point on the route will the expedition be held up for lack of power. For this purpose thirty-five Liberty-12 engines were selected from the seventy which had been previously rebuilt by the Rock Island Arsenal, using stub tooth gears, and which were stored at the Fairfield Air Intermediate Depot. The reconditioning of these engines involved complete overhauling, remodeling, and testing, to determine their fitness for the flight, each engine being required to develop at least 410 h. p. on the torque stand in order to be acceptable.

These engines were fitted with modified cylinders having reinforced heads, a practice which has proved practical in obviating water jacket leaks so prevalent with this type of engine. A successful method was worked out for giving the cylinders an initial distortion, so that they will be round after welding in the reinforcing place. Each engine is assembled with long studs for mounting the electric starting equipment. Ignition is furnished by a Delco system, using a standard distributor without booster attachment. Fuel is supplied by a single engine-driven gear pump, operating as the main system, supported by one wind-driven pump as an auxiliary and a hand wobble pump for emergency purposes. The engine-driven gear pump is favored principally because of its ability to pass dirt, grit, and other foreign substance without impairing its operation.

Four of these engines were shipped to the Douglas Co., Santa Monica, Calif., for installation in the World-Cruiser airplanes and eighteen were shipped to Fair-



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which worries us—
it’s the *ground!*”**

Formerly, exact knowledge of the country over which you were to travel was largely a question of convenience. Now it is often a matter of more vital importance.

Air travel has made positive the necessity that information as to the *ground* be accurate—for routes, location of landing fields, topography, distances and a myriad details. Air travel has thrown an unprecedented responsibility upon *maps*.

Officers of the U. S. Army Air Service use RAND MCNALLY Maps in their record-breaking flights because of the *invariable accuracy* which has made the word “maps,” wherever heard, mean RAND MCNALLY.

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field for distribution to various bases along the route. The others will be shipped in due time.

Thirty-one propellers, built by the Engineering Division, have to date been shipped, four to the Douglas Co., for installation on the four planes, and the remainder to Fairfield for shipping to bases in foreign countries. Thirteen of these were oak propellers to be used with the pontoon equipment. These propellers were the standard type, except for the fact that instead of the serrated terne plate tipping, solid brass, shoe-type tipping was used. The eighteen propellers to be used with landing gear were of walnut. These had the terne plate scallops used on the standard propellers with the addition of five extra scallops, bringing the tipping up to within 10½ inches of the hub.

Other special engineering features were also planned for the flight. Bright yellow dope is used on the surfaces of the upper wing and the tail to facilitate spotting the planes in case of forced landings. To further increase the reliability of the electrical equipment used, the controls of the 200-watt, wind-driven generators are housed in special boxes to protect the regulators and to afford greater ease of adjustment and inspection. In order to conform to the international code for auxiliary riding lights, some type of kerosene or acetylene lamps will be carried. This type of light will not only conserve the starter batteries that supply current for the electric riding lights, but will be useful in case it is necessary to keep the lights burning through the night.

Prior to the testing of the experimental model of the Douglas World-Cruiser airplane at Langley Field, extensive flight tests were carried on at McCook Field. In these tests a speed of 105.4 miles per hour at 1650 revolutions per minute was obtained. In the first climbing test an actual ceiling of 8,600 feet was reached with a gross weight of 7,260 lbs., at a climbing rate of 370 feet per minute, zero altitude. The service ceiling was attained at 7,300 feet, the absolute ceiling being computed at 10,000 feet. On the second climb the actual ceiling was reached at 9,200 feet at a climbing rate of

(Continued on Page 37)

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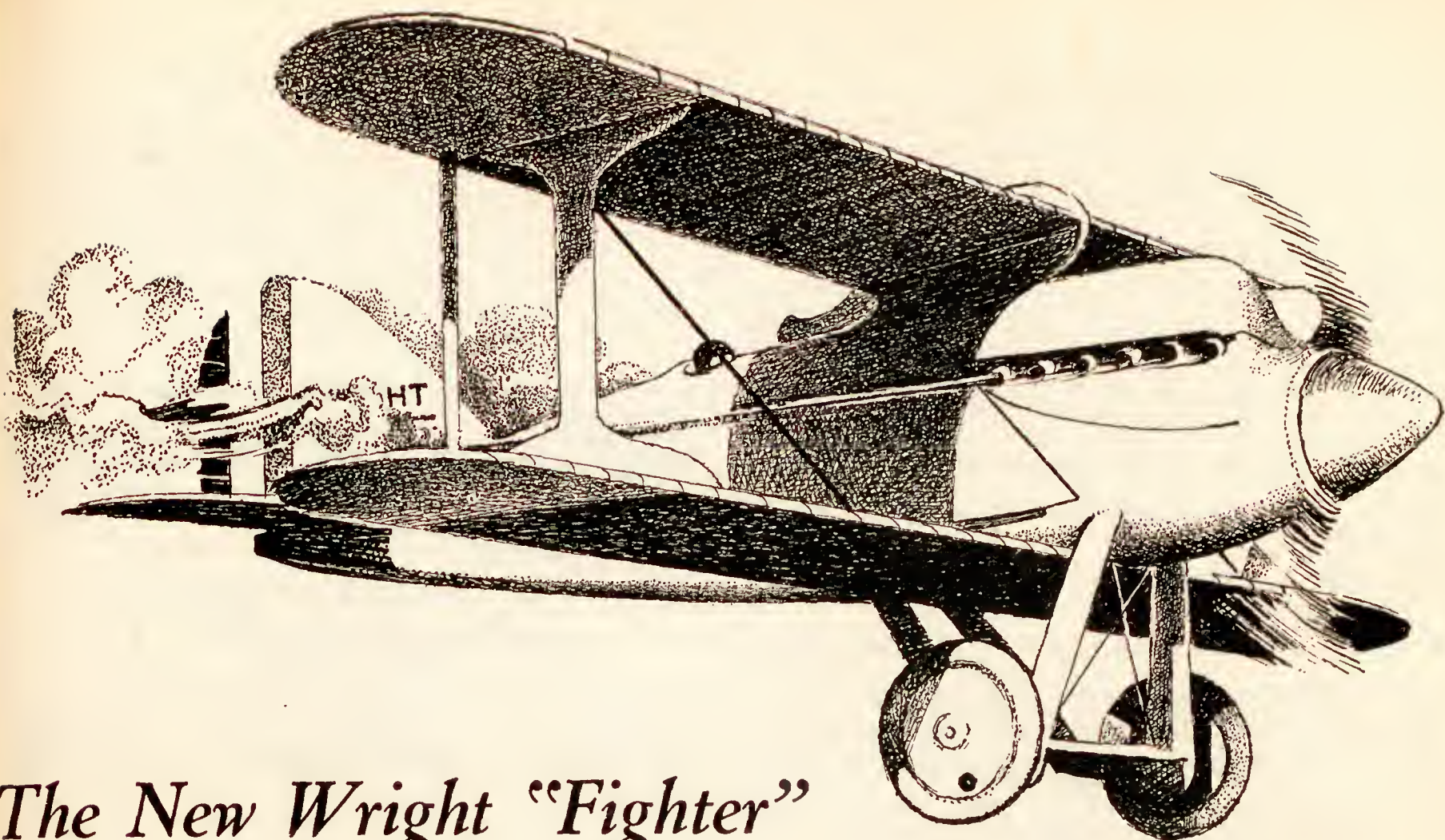
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THE new Combat Plane recently designed and built by the Wright Aeronautical Corporation for the U. S. Navy is one of the fastest aerial fighting machines ever constructed.

Speed, ease of maneuver and control—all these are found in the Wright to a remarkable degree. Her T-3 motor, generating 700 h.p., is one of the most powerful airplane engines ever installed in a pursuit plane of this type, and drives the plane at the almost incredible speed of 230 miles per hour!

To protect the surfaces of the plane from the constant attack of sun, rain, hail and snow, Valspar was used throughout—for *weather can't hurt Valspar*.

Waterproof and weather-proof, Valspar is marvelous in elasticity, unequalled in durability. It is the ideal Varnish for airplane use.



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Instrument Test Flight

Traveling by the aid of navigation instruments alone, Lieut. F. H. Barksdale, McCook Field pilot, and Victor Showalter, civilian navigator of the same post, pulled in at their home post April 2, completing the longest navigation flight ever undertaken.

Starting from McCook Field several days before, the two airmen leveled off at an altitude of about 12,000 feet and relied solely upon their instruments for calculating their direction and guidance.

The points in the 2,500-mile trip are: McCook Field to Belleville, Ill., to Kansas City, Mo., to Kelly Field, Texas, to Muskogee, Oklahoma, and thence returning to McCook Field.

The last lap covered a distance of 700 miles which was completed in a little more than six hours.

The plane used was a specially equipped DeHaviland.

The tremendous interest taken by the young people of France in model airplane building and flying is indicated by the recent tournament at Romainville where prizes and certificates were given for the best models.

Valspar Firm Gives Prize

Harry Rogers, who flew a Curtiss Sea Gull plane at a speed of 69.9 miles an hour and won the civilian free-for-all Miami Chamber of Commerce Trophy race at the Miami Air Races and Water Regatta, received in addition to the Trophy and \$500 in cash from the Chamber of Commerce, a special prize of \$100 from Valentine & Company, manufacturers of the widely known "Valspar" Varnish.

VALSPAR has come to be regarded as a byword in aviation circles where this waterproof varnish is used on all exposed parts of aircraft.

It is needless to say that the Air Industry holds a very friendly attitude toward Valentine & Company for their many evidences of co-ordination and interest.

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(Continued from Page 34)

445 feet per minute, zero altitude. The service ceiling of this flight was reached at 7,750 feet, while the absolute ceiling was 10,500 feet. The gross weight of the airplane on this flight was 7,216 lbs., including a useful load of 300 gallons of fuel, 30 gallons of oil, 200 pounds of baggage, and a crew of two men, whose combined weight is equal to 360 pounds.

As the result of the water tests at Langley Field, a number of changes were found desirable to incorporate in the four World Cruiser airplanes constructed at the Douglas factory. These included a change in the fuselage covering at the side and bottom aft of the fire wall, to fabric with large overlaps at the lacing points to exclude water. The metal covering on top of the fuselage was retained. The engine mounting was strengthened by increasing the gauge of metal and extending bearers back to the fire wall and anchoring. The pontoons proved faulty, and new ones were designed and proved successful.

The announcement is made by the Aeronautical Chamber of Commerce of America, Inc., that the Aircraft Year Book for 1924 ("The Story of Flying"), will be off the press about June 1.

The Slipstream Publishing Company has made arrangements with this body to offer the new Year Book at a special rate. A notice of this special offer will appear in the June issue of Slipstream which will appear May 20.

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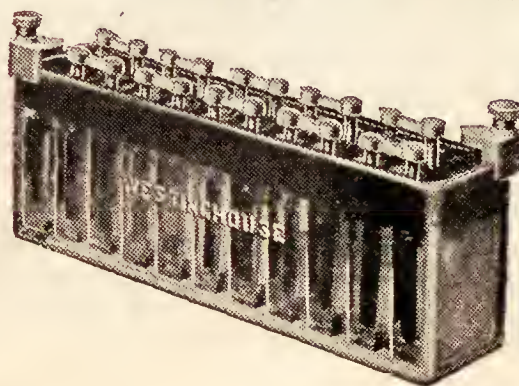
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Lieut. Macready's Altitude Flight

A test of the 35,000-ft. supercharger for altitude was made on the morning of February 22, at McCook Field by Lieut. John A. Macready, former holder of the World's Altitude Record, in which it was hoped the record might be won back and restored to the U. S. Air Service.

Lieut. Macready took off at 9:32 a. m. in the same LePere which for so long kept all altitude records strictly on this side of the Atlantic, equipped as before with a Liberty supercharged engine. The supercharger, however, was a new development, designed to give sea level efficiency at 35,000 feet.

Lieut. Macready landed at 11:22 o'clock, with the barographs showing an indicated altitude of 41,000 feet. This figure, of course, will be reduced under the Bureau of Standards and F. A. I. calibrations. The record as held by Sadi Leeointe, of France, is 26,564.8 feet. The altitude attained by Lieut. Macready on February 22 will no doubt better his former record, but will scarcely equal the World Record held by France.

Intense cold was encountered on this flight, a strut thermometer having bursted at 70 degrees below zero, Fahrenheit, while a cockpit thermometer registered 75 degrees below zero. Lieut. Macready, in spite of seven or eight layers of clothing, was chilled to the marrow when he reached the ground. At the peak of the climb there had been a breakage, which Lieut. Macready described as having shaken the ship badly and which he placed in the supercharger. This caused him to descend without further delay. Subsequent examination, however, showed that there had been no supercharger failure. It was a cam shaft roller bearing that gave way. The consensus of engineering opinion, however, seems to be that as an altitude ship the LePere has outlived its usefulness; that had there been no failure of a cam shaft roller bearing it had struggled just about as high as it was capable of climbing.

When it is realized that the French made their record after seventeen trials in a specially built altitude plane,

(Continued on Page 40)

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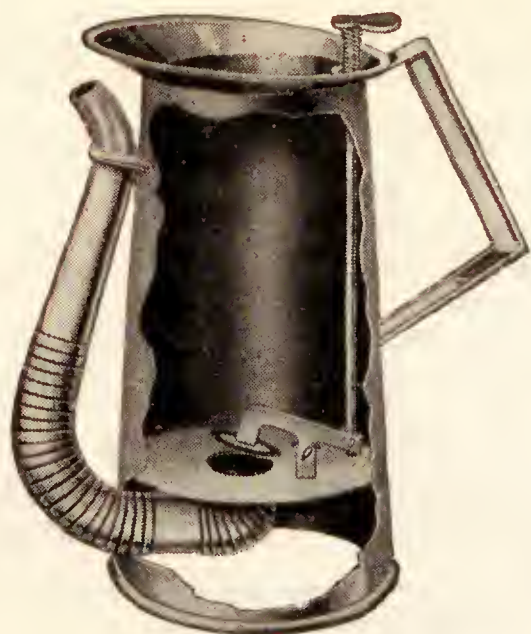
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Dayton, Ohio

(Continued from Page 38)

weighing 2,000 pounds, in contrast to the LePere's 4,600 pounds, this conclusion seems logical. It is another lesson that even American energy and optimism cannot accomplish the impossible and that a small matter of appropriations must be had to propitiate Science. The morale and physical endurance of Lieut. Macready are equal to any human ceiling. We have our pilot. If we want the World's Altitude Record it would seem that we would have to do as our French competitors did—all honor to them—and develop a ship. In the meantime, the flight of February 22 as a test of the 35,000-ft. supercharger may be considered a distinct success.

Entries in National Elimination Balloon Race

SAN ANTONIO, TEXAS

April 23, 1924

Entrant	Pilot	Aide	Name	Size
H. E. Honeywell	H. E. Honeywell		"The Co-operative Club" of Kansas City, Mo.	78,000 cu. ft.
U. S. Air Service	Maj. Norman W. Peek	Lt. Robt. E. Robillard	Air Service	80,000 cu. ft.
U. S. Air Service	Capt. Edmund W. Hill	Lt. Jas. F. Powell	" "	80,000 cu. ft.
U. S. Air Service	Lt. Ashley C. McKinley	Lt. Lawrence A. Lawson	" "	80,000 cu. ft.
Aircraft Development Corp.	Herbert V. Thaden	S.A.U. Rasmussen	"Detroit"	80,000 cu. ft.
B. A. Fournier	B. A. Fournier		"San Antonio"	50,000 cu. ft.
Goodyear T. & R. Company	W. T. Van Orman	C. K. Wollem	"Goodyear III"	2,200 cu. m. (77,692 cu. ft.)

It will require less than \$20,000 to get the ground at Wilbur Wright Field in perfect order for the great International Air Races. It cost St. Louis a sum several times as great. The Dayton field is well sodded and will waylay the unhappy features of the "seas of mud" and clouds of dust experienced at the St. Louis event of last year.

All of the big cities in the U. S. will know what it means to be bombed from the air when the big advertising campaign for the International Air Races is launched. It is proposed to make aerial raids on various cities throughout the U. S. with the use of bombs dropped from the planes and exploding in mid-air.

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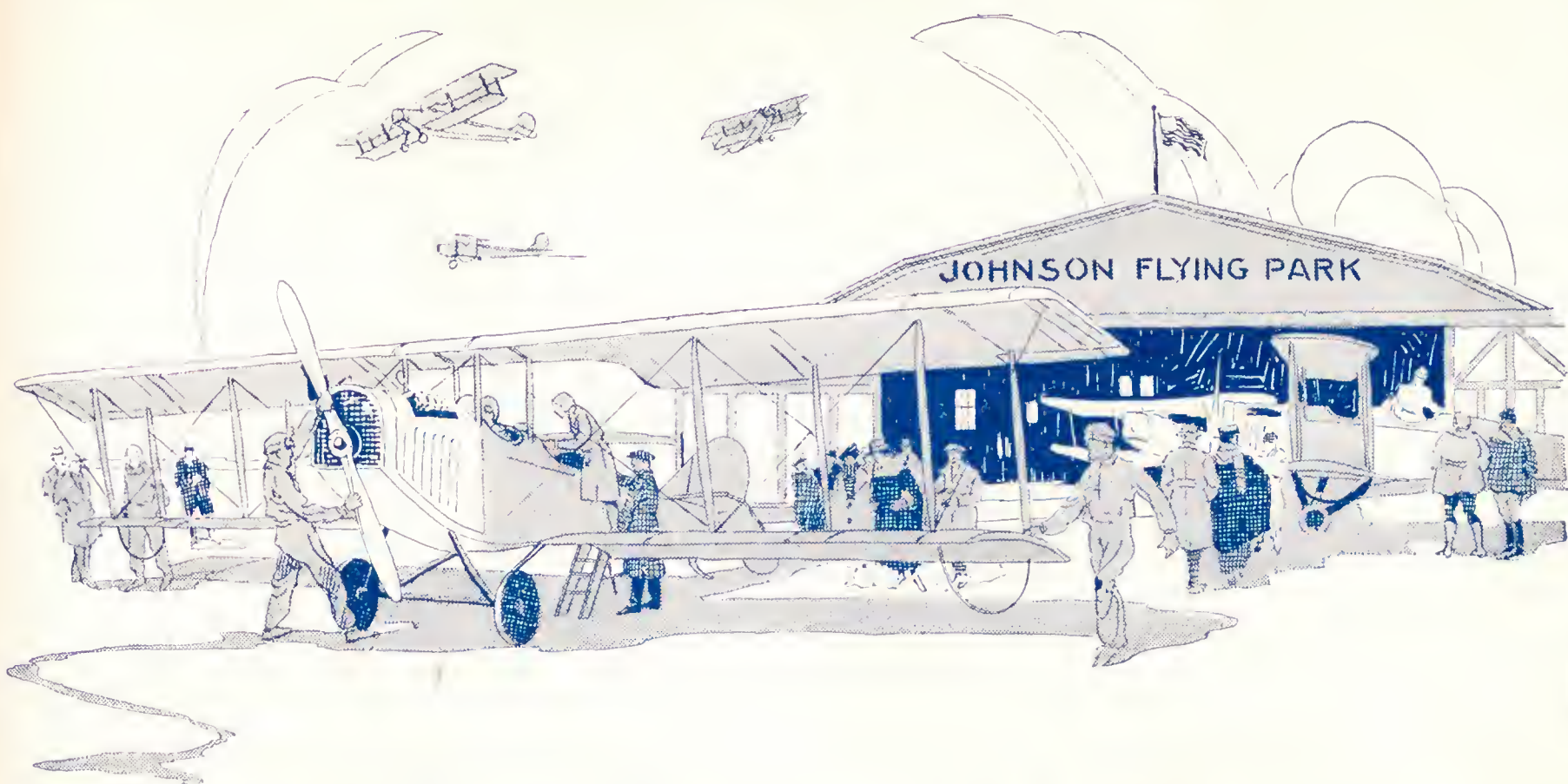
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JUNE
Vol. 5 No. 6

20 Cents the copy

Airway Age



"Birds of a Feather" --- World Cruisers at Sitka.

WHO WILL GET MCCOOK FIELD?

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The Light Airplane Race --- International Air Races
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VOL. 5 JUNE NO. 6

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FRED F. MARSHALL Editor and Business Manager

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WHO WILL GET McCOOK FIELD?

By Fred F. Marshall, Editor

THE proposed moving of the Engineering Division, Air Service, to the site east of Dayton and the ultimate expansion of Air Service activities which this change will facilitate, is of much interest to the entire country.

Contrary to the popular belief in this vicinity, the plans as laid out and presented to Government officials, though however tempting, have met with no little opposition. According to those who have occasion to observe the affairs first hand in Washington, this opposition is of a varied character, and naturally includes the political influences which must unhappily enter into every vital question of our nation's well-being. It is also known that there are certain corporations who figure that it will be to their decided advantage to have the Engineering Division disbanded altogether. Coupled with these adverse motives we might include the promising offers made by other communities, which are yet competing for the new flying field. Therefore, it can readily be seen that however bright the prospects may appear on the surface, the retention of the Government Experimental Air Service Station in Dayton is not a settled issue.

It was fortunate for Dayton that she possessed a citizen of such foresight and public spirit as the late John H. Patterson, President of The National Cash Register Company, who brought influences to bear in Government circles at the first intimation that the War Department must have a new location as a permanent home for the Engineering Division. Mr. Patterson left no stone unturned to put before the Air Service authorities the outstanding points favoring a location near the city of Dayton and today, as a result, the Gem City is on the ground floor of such legislation. Though having been stricken in death in the very midst of his efforts along this line, his son, Mr. Frederick B. Patterson, with all of the zest and unselfish interests of his father, has taken over the work and is hoping to fight the project through against the many new obstacles.

It is a significant feature in the face of the many adverse developments that from all indications Major General Mason M. Patrick, Chief of the Air Service, favors the Dayton site. It is also known, that Hon. John W. Weeks, Secretary of War, has shown an inclination toward this location. Negotiations with the Secretary of War, the Attorney General, and officers of the U. S. Air Service have been carried on for some time, and on no

occasion has Dayton been left in the lurch on any issue. The twin bills recently introduced by Senator Frank B. Willis and Congressman Roy G. Fitzgerald, providing for the sale of five abandoned air sites, the money to be used for the erection of permanent buildings on the permanent site of the new aviation experimental field, furnish a means of fitting up the new field in the most economical and practical manner, but as yet Congress has failed to entertain the idea very seriously. The abandoned air sites cost the Government annually \$131,488 in rentals in the face of a very nominal usefulness, and it is, therefore, still felt that Dayton has placed before the Government a proposition which will be difficult to rival, even in the face of the numerous other offers, once the thing comes to a definite issue.



THE tract presented to the Government by Dayton citizens appears to be by far the most satisfactory for any number of reasons. It will make the world's largest flying field, comprising in all 4,325 acres of Miami Conservancy land east of the Huffman Dam. The tract is about one and one-half miles from the eastern city limits, commencing at the little hamlet of Riverside, formerly known as Harshmanville, and is bounded on the north by the Springfield Pike, and on the south by the Yellow Springs Road.

When it became known that in order to keep pace with other communities it would be necessary for this city to present a suitable tract of land to the Government, there was no time lost. With the swiftest and most successful money-raising campaign ever conducted in Dayton there was a sum of \$400,673 subscribed by public spirited citizens of the community for the purchase of this tract of ground. The campaign in the vigor of its prosecution, and in the splendid response of Dayton citizens, was one in which the city will take pride for many years.

Aviation experts who have visited the Riverside site declare it to be most favorable from every standpoint. We feel confident that the favorable features of the Dayton tract combined with the presence of the many facilities afforded by the city and community will outmatch any arguments of one kind or another that can be brought forth toward moving the Engineering Division to another more distant point.

SITUATED in the richest region of our whole land, it lies in the most formidable spot from foreign invasion. It is reached by two main line railroads, five

national paved highways, and is only one night's ride from all important cities east of the Mississippi River. The topography of the land is such that very little grading will be necessary. A city of 175,000 people lies near—a city known the world over for its aviation activities, recognized as aviation's birthplace, and hailed everywhere during the World War as the stronghold of the United States Air forces. As a consequence of this war program there has been drawn to this community the best specialized labor in the aeronautical industry. Dayton is the center of the automotive industry of the United States.

The retention of the experimental air station, and its future expansion, would be looked upon the world over as a perfectly natural and sensible course of events. We wonder how many people have stopped to figure out the time, labor, expense, and moral disorganization, the moving of the Engineering Division to a distant point would involve. Housed in the three-quarter-mile stretch of buildings and hangars are hundreds of tons of material, office equipment, airplane parts, engines, machines, instruments, etc. The move to the Dayton site could be accomplished at a minimum expense of \$80,000, whereas transportation to a distant point would require much time, and the expense would be four or five times as great. Should the stupendous job of crating, packing, and loading of the Engineering Division equipment be accomplished for a distant shipment by freight, there would yet confront the Government a far greater difficulty—one which we dare say could not be wholly overcome—in the transportation of the Engineering Division personnel. It cannot be hoped to move the experimental station and bring it to its present state of efficiency unless it is able to retain the body of engineers, designers, mechanics, and aeronautical experts who have been gathered together through several years of careful selection. A good percentage of these employees are now regarded as permanent citizens of Dayton. They own property here and have their children in the schools. The question is whether these men will be willing to bundle up their belongings, sell out their property, and move with their families to some other point which may not be to their liking. Indeed, should the Government attempt a reorganization, the expense involved in training new men would be enormous, and the time lost disastrous. It is estimated that the cost to the Government in labor turnover alone would be \$140,000 more than the cost of moving the physical property to the new Dayton site. These are

only a few of the outstanding features which should be brought to mind when the question of moving to a distant point is considered. Dayton has provided the most satisfactory site of any community, and she has shown by her public spirit and civic progressiveness that from no other locality can the Government hope for such co-operation and loyalty toward the cause of aerial development. As to why the Government station should stay near Dayton has been answered logically by its citizens. A decision to accept any other site, we believe, must be the result of an altogether foreign influence and devoid of the practical point of view.

At the present time the architects are still busily engaged in mapping out plans of buildings and construction work in connection with the proposed new home of the Engineering Division. Tentative plans, linked with the proposed sale of the five abandoned air fields, will aggregate a sum of \$10,000,000 for the purpose of erecting permanent buildings. The expansion made possible by the move will mean an annual pay roll of from \$2,000,000 to \$5,000,000 (McCook Field now has the fourth largest pay roll in Dayton). It will give employment to from 3,000 to 5,000 skilled workmen. It will mean the building of hundreds of new homes. It will give Dayton further world-wide publicity. It will increase Dayton's population many thousands. It will furnish a fitting memorial to the Wright Brothers. It may result in the location here of an air academy surpassing the West Point and Annapolis institutions. It will advance the educational opportunities and standards of the community. It will focus the attention of the world upon Dayton's activities. It will attract the manufacturer of aircraft. It will draw thousands of desirable visitors. It will add to Dayton's reputation as a precision center. It will be splendid evidence of the progress and patriotism of Dayton people.

CURTISS CO. OFFERS PLANT FOR McCOOK FIELD

For a total cash expenditure of \$148,000.00 over and above the mortgages, the Curtiss Aeroplane & Motor Co., Inc., offers to the War Department their plant located at Garden City, Long Island. This offer includes the entire equipment and twenty acres of ground.

"That there will be a very serious consideration of this offer by the War Department goes without saying," announces the "Aviation Weekly," which prints a detailed account of this offer in its May 5 issue.

Mortgages on the Curtiss plant figure about \$852,000.00 which means that the War Department would be obliged to pay \$1,000,000 to get the property.

The offer is presented with a strong bid to underrate the offer of Dayton citizens which it is claimed would involve vastly greater sums to utilize.

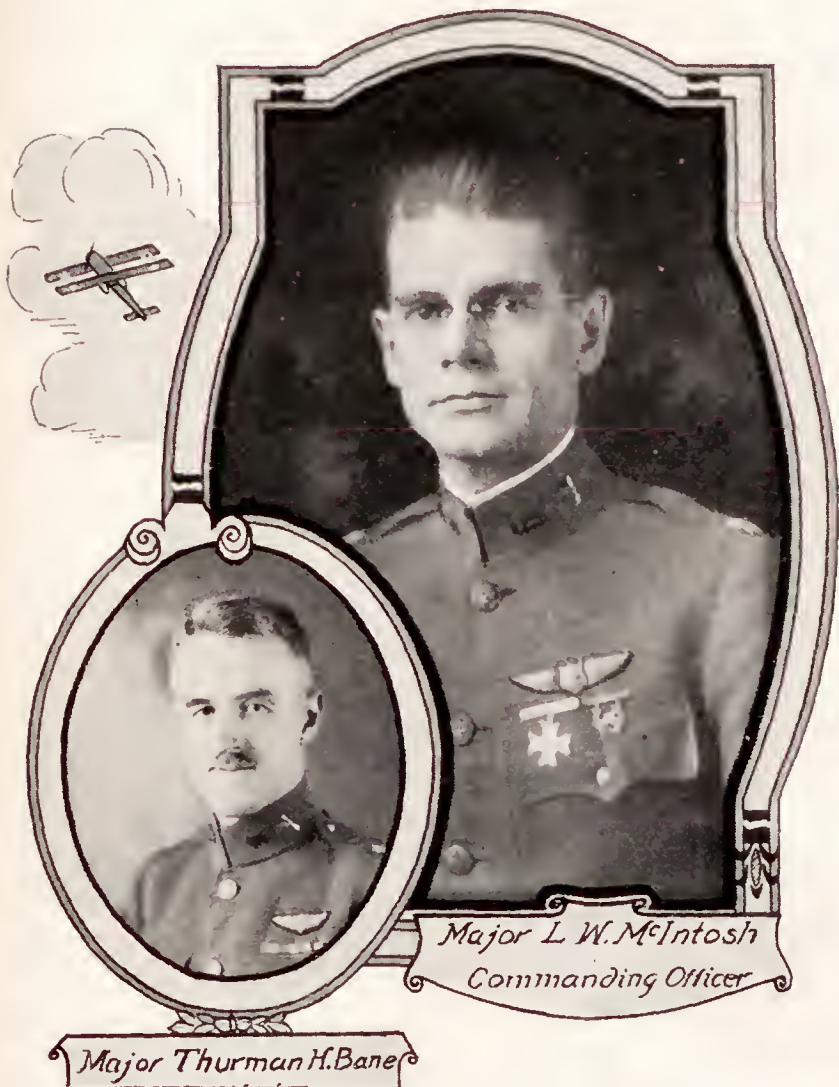
Fokker Decorated by Holland

In recognition of his work in developing and improving the Dutch Aircraft Industry, Anthony H. G. Fokker, famous aircraft designer, has been invested with the insignia of the Order of Orange in Gold.

H. R. H. Prince Hendrick of the Netherlands called on Mr. Fokker at his home in Amsterdam and informed him of the command of the Queen of Holland that he be invested as a token of appreciation from Her Majesty and the people of Holland.

Her Majesty spent an entire day examining the new Fokker planes and expressed intense interest in the activity at the plants.

New and Former McCook Field Commanders



MAJOR A. H. HOBLEY

Many recent changes have been effected in the military personnel of McCook Field, Dayton, Ohio. Most important are the changes made in Commanders of the Post:

Major L. W. McIntosh, who succeeded Major Thurman H. Bane as Commanding Officer in January, 1923, in the event of the latter's retirement from active service will be transferred from his post July 1, and will report for duty at Ft. Leavenworth General Staff School in September. Major A. H. Hobley, assistant to Major McIntosh, will be transferred to duties on the War Plans Board.

Major J. F. Curry succeeds Major McIntosh as Chief. He has been stationed at McCook Field since February, 1923, and has attended the Engineering Officers' School since this time. Like the three other officials mentioned. Major Curry is a West Point graduate.

The selection of Major Curry as the new Chief of the Engineering Division, McCook Field, is a most logical one in the opinion of everybody concerned.



MAJOR J. F. CURRY
New Commanding Officer



VARIOUS STAGES IN THE HISTORY OF TRANSPORTATION

(1) The new Stout All-Metal Air Pullman, the very latest word in modern vehicles of transportation. (2) An early stage coach—"fast" transportation a century ago. (3) The first "railroad." (4) The "steam carriage" appears on the highways and vies with the stage coach. (5) One of Stephenson's passenger engines. (6) A modern monster beside a locomotive of 1832.

THE NEW ALL-METAL AIR PULLMAN

(Stout Metal Airplane Company, Detroit)

WE move too slowly. Unless we can transport our merchandise and passengers more quickly, we are 'hostages to fortune,' and will surely not progress as we ought to progress."

Spoken a century ago, this is the thought, the urge, that is responsible for our great systems of transportation by which today vast quantities of metal, lumber, and live stock, grain, and innumerable other raw materials and finished products are carried quickly to consuming centers.

There is still, however, an ever increasing need and call for greater speed of delivery. Certain lines of industry have leaped forward since the World War and demand an obliteration of delay in all phases of production. The mails carried on the fastest express trains are not speedy enough to waylay many losses to big interests. Interest and use of legal tender are lost while time is consumed in transit, high-salaried representatives pile up too much overhead in travel to and from their destination, the highways of commerce are too crowded—there is a dire need and a demand for a new lane of traffic and a swifter, more dependable vehicle of transportation.

THE news that the Stout Metal Airplane Company of Detroit, incorporating as directors and subscribers scores of the leading men of the automotive industry in the United States, has built what is claimed to be the first real commercial airplane built in America, comes as a happy revelation.

This new plane weighs 1,000 pounds less than a Cadillac car, has a wing spread of 58 feet, a length of 45 feet, and with a 400-horsepower Liberty engine carries eight people in a luxurious Pullman compartment of real limousine equipment.

The entire fundamental of the design is for safety, and a remarkable number of factors for this end have been incorporated with no attempt to follow military design in any way, nor to build from old war-stock material for economy reasons. The Stout Air Pullman—as it is called in passenger form, or the Air Truck in express or mail form—is a brand-new venture from every standpoint and a complete embodiment of the latest and finest new items for the paying of profit with airplanes.

The size of the plane has been chosen to fit the greatest range of commercial use and the widest plan of operation fields possible with present-day conditions, taking it for granted that money-making aviation must start with things as they are, and not as they will be or should be.

It might be stated in the beginning that the company is not planning the sale of these planes irrespective of purchaser, but will only dispose of them to operating companies under a supersane licensed operating plan, so that the Stout Company can thus protect its equipment from misuse in dangerous or questionable ventures.

The Air Pullman is a seven-passenger-and-pilot cabin transport designed for air line work with tank capacity of six hours fuel; the major items of design were laid for the most possible hours per day in the air, with all assemblies and units so arranged that they may be instantly inspected and quickly replaced. It is stated that it is possible to change the complete engine unit and lift a new one ready to start in less than one-half hour.

The plane has a muffled engine, dual control with side-by-side seats and arranged for wireless sending and receiving sets. A wind shield is arranged in front of the pilots. This wind shield forms a part of the leading edge in such a manner that it is an asset to lift and speed, rather than a liability. The sides of the pilot's cabin are entirely left open and pilots who prefer may fly out of doors. Swing windows are arranged, however, so that in the air the pilot's compartment can be entirely enclosed, heated, and ventilated, so that he may travel in comfort even in the coldest weather.

The main cabin is equipped with six deep upholstered seats and with plenty of leg room for the tallest of passengers. At the front of the cabin in plain vision of all passengers is an air speed indicator and altimeter.

For long trips the two rear seat pairs fold together to form benches on the side facing each other, with card table or dining table arranged between, so that cards or Mah Jongg can while away the hours when the passengers get tired of scenery.

Meals will also be served on this table from a small

Today we are served by a vast transportation system which holds together the industrial, commercial, and social fabric of the Nation. One hundred years ago, slow-moving wooden canal boats and stage coaches carried people and goods—supported the commerce that served industry. The transition from slow-moving wooden vehicles to metal trains driven at high speed over steel rails, is filled with romance. It is the happily successful struggle of men with imagination, ingenuity, and perseverance peering into the future, wresting mechanical secrets from nature, and fighting unceasingly against great odds, hampered at every turn by the ridicule of those whose minds are chained to custom.

galley arranged at the rear of the passenger cabin and where the foodstuffs will be kept.

Forward from the passenger compartment are two partitions about three feet apart enclosing a toilet and washroom and from this room one can reach overhead to the compartment where baggage is carried, out in the wings. From here also the gasoline tanks can be inspected and every part of the gas system up to the dashboard inspected or repaired while in the air. Tanks are so arranged that in filling with gasoline no fuel can possibly be spilt into the wings.

Forward of the washroom is the pilot's cabin. This cabin is large enough to stand up in, and fully equipped with all navigating instruments and map equipment.

The entire plane is constructed of duralumin in corrugated form in which it resembles somewhat the German Junker, but with this one resemblance all other similarity ceases, for structure, aerodynamics, and all are on an entirely different fundamental.

IN its aerodynamic layout the plane also resembles in some features the Fokker trancontinental plane, but does not at all resemble it in structure. The Fokker plane is of wood veneer and steel tubing with cloth covering and 1,200 pounds heavier than the Stout product, which is all-metal. This plane is also said to be forty miles an hour faster than the Fokker trancontinental job with the same engine.

The plane is of the long tail type with an adjustable stabilizer and counter-balanced rudder. The wing is of tapered section double convex and of high speed variety. The wing unit is divided into three sections; the center part of which fastens down onto the fuselage by six large bolts to the three main spars. The two tips are detachable for shipping and transportation purposes or for replacement in case of damage.

A wing of really thick section is used, the main spar being almost five feet deep on a chord of trifle over twelve feet at the center. The fuselage hangs below these wings, and is fitted with semi-circular windows which swing on a pivot to give one an unusual view in the air. There is nothing to obstruct perfect vision, the wing being above, and one can look across country clear to the horizon with the wing above shading him from the direct rays of the sun. Even the pilots have perfect vision in every direction except up and to the rear, but they can see the horizon in every direction, can see their own landing gear and practically every part of the plane from the pilot's seats.

The engine is muffled by running exhaust pipes back along the side of the ship almost to the tail, these pipes being constructed of duralumin and drilled for a gradual muffling effect.

For winter work, openings to the cabin furnish heat in plenty, even for flying in zero weather, while summer cooling is obtained by perfect ventilation of open windows.

Very solid doors between the passenger compartment and the pilot's compartment form two bulkheads, while the dashboard forms a third between the passenger compartment and the engine, so that very little engine vibration or sound gets back to the passengers.

The passenger compartment is also enclosed to prevent noise from traveling back to the cabin and further conflict from the mechanical noises of the engine.

The engine installation is very exceptional and every part more accessible than in any other installation we have seen. The base of the engine mount fastening to the fuselage is extra wide, giving great rigidity to the installation and at the same time placing the structural work far enough from the engine itself so that one can reach in and get at everything.

The engine is a standard Liberty 400-horsepower, but fitted with a new intake manifold which is the latest development of the Air Service.

New heavy timing gears have also been fitted, and the new type jump-gap "Delco" distributing system.

The generator is wound for 12 volts for a large battery which not only takes care of ignition, but a Bijur electric self-starter with which the plane is fitted, the foot button and controls being between the pilots so that either one can operate the engine.

A GASOLINE system includes two all-aluminum tanks of 75-gallon capacity, each placed out in the wings twelve feet apart and well above the engine so that gravity feed is used without the complication of pump or air pressure. All gas lines are flexibly joined with metal connections inside the rubber hose to prevent any parts working in. All gas lines in the engine unit are wound with tape and shellacked to prevent vibration.

The water system with radiator and shutters is a unit with the engine mount, as is the entire oil system. The oil tank is supported under the engine just forward of the pump with a line running forward to join with a copper pipe which runs through inside the bottom part of the water radiator, giving about four feet of pipe inside the water. In this way the oil is warmed in winter and cooled in summer to an approximate engine temperature.

The landing gear of this plane is worth more than passing mention, for it is a big step toward safety. In the first place the landing angle of the ship is just sixteen degrees, so that once the tail skid gets on the ground there is no tendency to nose over. Added to this is a chassis with no axle, with no cross tube to catch on weeds or brush and thus make trouble.

The wheels have an eight-foot spacing and spring individually with twelve inches of spring action on top of the cushioning of eight-inch tire of thirty-six-inch diameter, so that side landings can be made.

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THE LIGHT AIRPLANE RACE

(As It Should Be)

By Thomas F. Hamilton

President Hamilton Aero Mfg. Co.

(Especially to *Slipstream*)

EVERYWHERE one goes in aviation circles, the forthcoming Light Plane Races at Dayton is the chief topic of discussion. Two distinct schools of thought along this line have developed. One contending that the rules as now written will not tend to develop the ideal type of light plane. The other contending that it is practically impossible to stage a contest in the short time allotted to the light planes that would be a scientific competition on points and yet be interesting to the public. Much has been written about the desirability of having a scientific competition based on points and very little has been said in support of the straight race proposition.

It is quite possible that the entire thing could be better adjusted if some one would come forward and clearly define the light plane. Is the coming light plane to be a glider of fragile construction and enormous dimensions on account of its light wing loading with only sufficient power to keep it in the air, or is it going to be the "Flivver" of Aviation, having reasonably small "over all" dimensions and powered by a motor with sufficient reserve power to buck at least light head wind? It is believed by many that it will be the latter type of plane that will be purchased commercially in the future, but possibly a two place plane, mounting a motor of four or more cylinders having a displacement of approximately 160 cubic inches would be more practical. Considering this as the minimum requirement of a commercially possible light plane, we cannot agree with our scientifically inclined friends who can very well figure on paper that we can fly commercially with less than forty cubic inches.

THE committee in charge should be thanked by the entrants, who have to buy a power plant, for limiting the displacement at eighty cubic inches. This permits the use of a number of motorcycle motors which may be modified at low expense and yet be fairly suitable for the purpose.

With the possible exception of the Morehouse Motor, there is not a single American motor suitable for light planes that is now available at a reasonable cost, hence the necessity for falling back on the more or less reliable motorcycle motor.

Motor manufacturers cannot be expected to spend thousands of dollars for the development of a light plane motor until they are reasonably assured of a market and also ascertain the type and displacement of motor needed commercially.

The competition idea based upon points is indeed very

good for comparing designs but has no place in a meet where "Races" are what the public comes to see; for example, those who witnessed the event, both at St. Louis and Detroit, will agree that the Pulitzer "Raees" were at Detroit. From the point of view of public interest, the Pulitzer event at St. Louis was a competition, or a series of speed trials. Inasmuch as the light plane races are scheduled to take place before the Pulitzer Race, there will be no comparison between the relative speeds of the two types. We venture to say that if the Pulitzer Race is run as it was in St. Louis, and for safety's sake as it should be, that the light plane races now scheduled will be far more interesting and offer the public just as many thrills.

Forgetting the desirability of "selling" the light plane to the public for the moment, let us consider what the races have to offer that will satisfy those who prefer a competition. Under the present rules the element of take-off is a consideration, as the planes start at scratch with motors idling. Surely the first plane in the air is going to have an initial advantage and it will not be the plane that will do 120 m. p. h. with 80 cubic inches. In the first race, climb is going to be a governing factor, as the winning pilot, who tops the balloon at 500 feet on each lap of a 5-mile course, is going to have a ship with a very good climb. He will also have a fairly stable and controllable plane to make this climb and get around the pylons without losing much time.

As far as the reliability of the plane and motor is concerned, there is no better test than an out and out race starting at scratch. We should not attach such great importance to fuel economy within the light plane class, although there is an efficiency race on the card, owing to the fact that there would probably not be more than a gallon difference in fuel consumption at a given speed in a distance of two hundred miles between the most efficient light planes from a scientific point of view and the light "Flivver" Plane that has at least the hopes of commercial possibilities. Again, it is not so much the cost in miles per gallon of fuel as it is a cost of maintenance that is important. This will at least hold good until we have to pay European prices for "petrol." If one-half of the planes, that we have been informed are now in process of construction for this race, actually start, Daytonians are going to witness two amusing and very interesting races.

In order to minimize structural failures great stress should be laid on the factor of safety requirements. A

(Continued on page 25)



An Alaskan Fishing Village—Just one of the hidden outposts of civilization brought into the limelight by the round-the-world flight.

ROUND-THE-WORLD FLYERS

"CARRY ON"

WHEN word came May 11 from out of the frozen wilderness of Alaska that Major Frederick L. Martin, commander of the round-the-world flight, and his mechanic, Staff Sergeant Alva L. Harvey, were alive and unhurt after a crash against a mountain side in the dense fog, the whole world rejoiced. There were, of course, singular cases of rejoicing—particular hearts which were overcome with joy and thanksgiving for the kindness of fate in sparing loved ones from a grim catastrophe.

Some weeks ago when the four planes hopped off from Sand Point, Seattle, Washington, at the beginning of their hazardous undertakings, people at large did not generally appreciate the preponderous aspect of the whole affair. The hardships already encountered and the narrow escapes averted by sheer skill and courage of the flyers are making a more serious impression on the public as the accounts are brought to civilization from these bleak, hitherto little noted outposts of the far north-land. Our hearts go out to these courageous "modern Magellans" as we realize more and more the ordeal through which they passed to blaze this new trail around the world.

In reviewing the account of the flyers' journey thus far, it is like reading a modernized story of the historic Magellan expedition of some four hundred years ago, at least, the aspect is none the whit lacking in its adventurous aspect.

It seems that from the very start of the flight in early April when hopes were highest, ill-fortune and bad weather were encountered. The "bad-luck-jinx" centered his activities on the flagship *Seattle* piloted by Major Martin. After having been forced to postpone the scheduled take-off through inclement weather for a day the *Seattle* developed engine trouble and a prop was splintered. Later a fuel pump balked and necessitated the installation of a new one. Throughout the trip to Prince Rupert the airmen forced their way through a blinding snowstorm, while Major Martin and his mechanic fought grimly to keep the sputtering motor knocking along to the next halt. The snow was so blinding at Prince Rupert that the *Seattle* was brought down too hard in the water with the result of two broken wing struts. Repairs were made and the flight continued on April 10 to Sitka where another terrific storm was encountered with heavy seas. The account of the eight-hour battle waged by the flyers to prevent the *Boston* and *Seattle* from being swept into the shore surf and wrecked is a credit to their courage and tenacity of purpose.

Leaving Sitka at 8:43 a. m. on the 13th the flyers enjoyed clear weather. Knowing that the scheduled route from Sitka to Cordova was one of the most hazardous stretches in that division of flight, due principally to lack of available landing area, they followed the shore line, passing over numerous icebergs and with a formidable chain of great mountain peaks looming up inland on their right, with glaciers reaching down to the shore and breaking off into the Pacific. Instead of taking the unnecessary hop to Cordova, the four planes made good their time in the favorable weather and flew the 610 miles direct to Seward, arriving there at 5:00 p. m. A disappointed group of Cordova natives waited in vain for sight of the visiting planes which passed them well out to sea.

BLINDING snow squalls and storm warnings from Chignik, the next halt, discouraged the flyers from attempting a continuation of the journey on the 14th. The following day the skies cleared and the four ships hopped off about 10:00 a. m., lifting up from the deep calm waters of Resurrection Bay in the face of a light west breeze. The hop from Seward to Chignik was also a dangerous and difficult one and the aviators deviated from the straight line of flight in order to keep in communicating distance with small settlements, thus going by way of Chugach Island; the entrance to Cook Inlet; the Barren Islands; along the shore of Kodiak Island to the head of Uyak Bay; thence along the headlands projecting from the southeastern shore of the Alaskan Peninsula to Chignik, the termination of a 475-mile hop. An altitude of 5,000 feet or more is necessary to clear the mountains and afford the airmen safe gliding height when passing over the bad stretches. Numerous glaciers and several volcanoes were passed en route, including the Valley of Ten Thousand Smokes. Snow squalls hampered the flight throughout and engine failure (a leaking crankcase) gave Major Martin serious trouble. The ship experienced difficulty in getting off at Seward and trailed the other ships like a disabled fowl trying to keep pace with the migrating flock. The *Seattle* was finally forced down, in Portage Bay, near Cape Igval some 120 miles short of its next goal at Chignik where the remaining three ships landed safely.

After spending all night in the plane afloat in Portage Bay with a zero temperature prevailing, the flyers were discovered the next morning by the American destroyer *Hull* which was standing by at Seward to aid in just such an emergency. The rescue of Major Martin and

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Fred F. Marshall, Lieut. O. R. C. Editor and Business Mgr.

MARKING THE AIRWAYS

Sometime ago the Army and Air Service spent considerable money in painting huge signs at various points along the Model Airways for the benefit of the pilots in determining their whereabouts readily while in flight.

A crew of men were employed and in each village and city along the main routes, the name of the respective town was painted in large bold letters on the roof of some conspicuous building. Many of these signs are now becoming weather worn and need repainting. With money so hard to get from Congress, it appears that there is an opportunity here for the various municipal bodies to lend practical and valuable assistance to the Air Service. If every town would assume the obligation to paint the name on a suitable roof and keep it in good condition by fresh coatings from time to time, it would facilitate greatly the work of the Air Service in its experiments toward perfecting regular and dependable air traffic.

We can visualize, of course, that some day towns will be glad to "coax down" the air travelers with attractive roof signs of one kind or another. We can picture "Stringtown" making a bid for transient business from the air by lurid signboards tipped critically skyward at the ends of the inviting airdrome telling the clondland revelers of the town's wares and features of interest. That sign space on the roof tops will sell at a premium goes without saying, for even now the crew which painted the Airway towns report that many property owners refused to let the signs be placed unless their own names appeared also.

TROPICAL ALASKA

A few million years from now, more or less, it is said Alaska may again become a tropical country and the United States may need whatever land the Shenandoah may discover between that country and the North Pole. Fifty years ago, we are told, it was thought impossible to grow wheat in western Canada, yet these prairie Provinces last year produced seventy-five percent of all the wheat grown in Canada. Also, we are informed, the apple-belt is moving northward. The northward course of other plants and flowers and the retreat of glaciers are held by some to show that the world is growing warmer. Then, too, Spitzbergen, the world's "ugly duckling" a few years back, now is known as one of the very few places in the world where good grades of coal and iron are found in close proximity to each other. In fact, so many are the arguments for settling what have been known as "the waste places" of the North—and discovering others—that Vilhjalmur Stefansson has written a book on the northward course of empire.

But this is not a book review. These are merely some of the reasons why the good airship Shenandoah should carry out her program and explore the million square miles of area between Alaska and the North Pole.

AVIATION IN GERMANY

Flying for military purposes has entirely ceased to be practiced in Germany since the close of the war. One of the terms imposed on the country by the Treaty of Versailles was that all airships, airplanes, motors, and airdromes, with insignificant exceptions, were to be destroyed. In many instances this destruction was carried out in a very short-sighted manner and material which would have been of enormous practical value for other industries was simply consigned to the scrap heap. The exceptions were very few, the number of airplanes which Germany was permitted to retain for civilian flying and for meteorological research work being limited to about 110. For the sake of comparison it may be added that about 48,000 machines had been constructed in Germany during the war.

The German airships had to be destroyed or surrendered to the Entente. Only one airship is now building at Friedrichshafen for the United States Government. It is expected that this vessel will be flown to America. The result of this trip will cause great interest.

Some of the private airdromes were permitted to be retained by their owners, and are now being used for civil aviation. The Entente has conferred upon itself the right of ownership of some military airdromes, so that these are not available for German flying enterprise.

All aerial matters are subject to strict supervision on the part of the German government which is firmly resolved not to tolerate the secret manufacture of either airplanes or airships. About one-half of the 110 ex-military airplanes saved from destruction have meanwhile become useless. If, as is sometimes alleged, any machines should still be hidden somewhere they are at any rate no longer fit for use now. Exposure to meteorological influences must have disabled their machinery, and their engines—which as is well known were constructed without exception on the water-cooling system—must have been destroyed by corrosion.

STATIC TESTING OF AIRPLANES

Locking the stable door after the horse has been stolen, is generally conceded to be poor practice, and yet it has been, and is, the practice of many airplane constructors to put a newly designed airplane into service without first having taken that essential precautionary measure—the conducting of a static test. This consists of loading a completely assembled airplane with shot bags and pig lead until failures occur. These loads approximate the loads experienced under actual flying conditions. Any weakness, either local or general, will be disclosed by this test, and the strength of all subsequent airplanes of this design will be assured. On the face of it, this is an expensive procedure, for not only is a new and shiny airplane ruined beyond recognition, but considerable time and labor are involved in making the test and working up the results. This is not the issue, however, for no airplane is safe to fly until its strength has been determined by this method. This statement is based on the fact that as far as known but one airplane has ever gone through its first static test in a satisfactory manner, although many of the airplanes tested were designed and built by the best aeronautical engineers in the United States and Europe. As far as expense goes, however, what asset is more to be desired than the reputation for turning out air worthy and dependable airplanes; and what, on the other hand, will injure an aircraft constructor more than to have the wings of one of his new airplanes fold up in the air and end in catastrophe, as many have done?

Airplane "Performance"

We sometimes wonder how much practical value "performance" figures play in the various designs of airplanes. For instance, a plane generally circles and circles about over a confined area in its attempt to determine the absolute ceiling. It remains in the air over the same flying field until the gasoline runs out and in this way it is determined that it has an endurance limit of so many hours, etc.—but what does this all amount to when the plane is called upon to perform these limits of duties in practical service? The endurance feature is quite a different matter when one is flying cross-country and it is a mighty dangerous business to keep going for four, six, or eight hours just because the original tests of the design placed such a limit of endurance on the ship.

New equipment, especially with respect to instruments, has provided a means of conveying to the pilot the information needed to make flying as safe and simple as possible. As long as he knows the rules of flying there are instruments to be had which will keep him in touch with every vital factor of the situation. If his fuel is low, the dial on the instrument board will indicate it, if the speed is too great, if the direction is wrong, if the altitude is not as desired, the data is right before his eyes. Slipstream carries as a regular advertiser one of the greatest and most reliable manufacturers of aircraft instruments in the world. They supply thousands of these instruments both to the U. S. Air Service, and to commercial aviators all over the world.

After all, we might say that it is better equipment rather than better designs which has meant most in the better performance of aircraft.

From Holland to Dutch East Indies

In the coming summer an attempt will be made to fly from Amsterdam to Batavia, via Prague, Constantinople, Aleppo, Basrah, Karachi, Calcutta, Rangoon, Bangkok, Sengora, and Muntok, a total distance of 9,321 miles. The machine to be used is a Fokker F-VII to be fitted with a 360 h.p. Rolls-Royce engine and the pilot will be T. Van der Hoop, who is already well known on the Amsterdam-London service of the K.L.M.

Slipstream,
McCook Field,
Dayton, Ohio.
Gentlemen:

In order that the city to which the 1925 International Air Races, including the Pulitzer Race, are awarded may have sufficient time to complete preparations for this event, it is proposed to make the award not later than July 1 of this year.

It is necessary for all cities interested in securing these events to furnish complete information.

The races must be placed in such locality that this association can be assured that sufficient funds are available and that proper time will be spent in preparing for these events as befits their importance.

Cities desiring these races are urged to submit their data at an early date.

The following are the principal items which must be taken into consideration:

(a) **Safety of the course.** In the past it has been the custom to use a triangular course of 50 kilometers around. This course must be over open territory, which should be of such nature that forced landings can be made without undue hazard to the pilot.

(b) **Landing field.** This must be approximately one mile square, perfectly level, well drained, and have ample hangar facilities.

(c) **Stability of the promoters of the meet; their financial responsibility and general good will.**

(d) **Hotel accommodation, facilities for reaching the field, that is, good roads, car lines, etc., etc.**

This committee will be glad to supply you with all information it has available with reference to conducting these races.

If you are interested, please forward information in as complete a form as possible so that it may receive careful consideration.

Very truly yours,
NATIONAL AERONAUTIC ASS'N.,
F. P. LAHM,
By F. P. Lahm, Chairman,
Contest Committee.

—O—

"Cut-Out" now Built for Airplanes

A McCook Field pilot, the other day, was instructed to take a certain airplane up for a flight of two or more hours. Automatically, he reached for cotton with which to stop his ears. "You won't need that," he was told. "This ship is equipped with exhaust silencers." And he found upon landing that the long flight had been made with a new kind of comfort.

Two apparently successful designs of exhaust silencers mounted on aviation engines are now undergoing service tests. Both have been designed and constructed by the Engineering Division. One of these designs, known as the whirl-chamber type, has been built for use with the Liberty 12 engine. These silencers are now installed in DH4B P-299. They are attached directly to the engine, while long, compactly designed pipes lead from the silencers, carrying exhaust gases clear of both cockpits. The overall dimension of the silencers is quite small; in fact, they are the smallest ever constructed for a power output as great as that

of the Liberty 12. Approximately seventy-five hours have been flown with them, with no burning out of the elements. The extent of the silencing is quite marked, and power loss due to the back pressure is less than three percent at full throttle operation. Speed loss is also negligible. Recent tests made over the speed course at Wilbur Wright Field with this equipment and standard headers showed a loss of but 3.1 miles an hour.

The development of this equipment was requested by General Patrick, who found the noise of the engine and the vibration harassing to ears and nerves, especially on his many long flights, and a pair of silencers is now being made for installation on the General's airplane. It was a happy suggestion, for they will prove of great use to the whole Air Service for long distance and airways flying, should be a useful part of the equipment for commercial airplanes, and in time of war would be invaluable for corps observation work.

FOKKER PLANES TO BE BUILT IN U. S.

Aircraft designed by the famous Dutch inventor, Anthony H. F. Fokker, are to be built in America, Major Lorillard Spencer, one of the directors of the new Atlantic Aircraft Corporation, announces to Slipstream from the New York office. In connection with this program, Major Spencer said that the new corporation establishes a firm connection between American interests and the Dutch designers.

The Atlantic Aircraft Corporation has a lease, with option to buy, on the modern factory and air port of the former Wittemann Aircraft Corporation at Hasbrouck Heights, New Jersey.

Since the war Fokker planes of the latest design have been purchased and tested by the U. S. Government with very favorable results. The magnificent non-stop coast to coast flight last year was made with a U. S. Army Fokker T-2. The same plane also captured a series of world's duration and distance records.

The directors of the new corporation besides Major Lorillard Spencer are: Frank R. Ford, of Ford, Bacon, and Davis, Inc., engineers, 115 Broadway; Charles S. Cuggenheimer, of Cuggenheimer, Untermeyer, and Marshall, attorneys, 120 Broadway; Anthony H. G. Fokker and R. B. C. Noorduyn, who has represented the Fokker interests here for three and a half years. The chief engineer in charge of the factory is A. Francis Arcier, who was formerly assistant engineer with Handley-Page of England and in charge of the construction of the Giant four engined bombers, built at Belfast, Ireland, during the war. Capt. Halbert E. Payne is the Washington representative.

Commenting on the new company, Major Spencer said, "Believing that aeronautical development has now reached a point where it is a prime factor in national defense and in commercial activities we are only too glad to add such a strong unit to the American Aircraft Industry. Mr. Fokker will spend a considerable part of his time in this country with the organization and his past knowledge of aircraft design and experience in building and flying aircraft will be a tremendous asset and help to our work. Mr. Fokker's experience with commercial air lines will also be very valuable. On most of the long air routes in Europe it is Fokker planes that are being used for the carrying of passengers, mail, and merchandise. The safety record of 100% on these lines since 1920 is unequaled by any other commercial air service and the mileage flown now totals over three and one-half million miles."

The company's factory at Hasbrouck Heights was constructed shortly after the war especially for aircraft manufacture. The main building is of brick and has a central bay built as a single span of 107 feet and 200 feet long, with large folding hangar doors which open to the flying field. Adjoining this assembly floor, separated by interior walls, are the wood working and metal working shops, stock and dope rooms. The power house is located in a separate brick structure. General offices, drafting room, and inspectors' offices are located on the second floor. The fact that the Barling Bomber, world's largest airplane, was constructed and completely assembled in this plant while at the same time some forty DH4's were being reconstructed on the floor will give some indication of its manufacturing facilities.

New Air Appropriation

The Congressional Committee recently recommended appropriations for the national defense program.

For aviation the committee recommended \$12,435,000, and proposed that an additional \$1,399,000 be reappropriated

from an unexpended balance. This would give the service approximately \$1,000,000 more than during the current year.

An appropriation of \$500,000 for production of helium was made, the committee pointing out that if a similar item were provided in the navy bill, the total would permit continuous operation of the Fort Worth, Texas, plant.

A mandatory provision is in the bill that not less than \$2,646,000 must be used for the production and purchase of new airplanes and equipment. To enable the army to carry out its proposed aerial flight around the world an allotment of \$50,000 is recommended.

For National Guard appropriations aggregating \$29,507,642 are proposed, as compared with \$29,814,140 allotted last year and budget estimates of \$30,577,940.

Plane Maintains Communication in Frozen North

Pilot Kenneth Saunders, accompanied by Photographer W. Kahre, of the Fairchild Aerial Surveys Company (of Canada), Ltd., flew from Lac Claire to Grand' Mere, P. Q., Canada, with mail, in forty-five minutes. The trip was made in a blinding snowstorm and the temperature at the time of the flight was around forty degrees below zero.

Lac Claire, which is a cache belonging to the Laurentide Company, located in the Saint Michel District, has a correspondent of the Grand' Mere *Journal* living there, whose duty is to send out news of what the exiles of Saint Michel are doing.

Until the advent of the airplane, such news took three days to reach Grand' Mere and the news items were usually a week or more old before they appeared in the columns of the newspapers.

The Fairchild Aerial Surveys Company (of Canada), Ltd., has been doing considerable aerial photographic work at Lac Claire and vicinity, flying under difficult conditions. The snow has been very heavy, and the temperature ranging at all times during their operations around forty degrees below zero.

Jean Boudrier, the *Journal's* correspondent, in referring to the exploit of Pilot Saunders, states:

This time the "Journal's" correspondent will not have to wait several weeks before reading in the paper his news budget, for this one will arrive in Grand' Mere this very day, less than two hours after it has been written, thanks to the courtesy of Messrs. W. Kahre and K. Saunders, who are leaving us with the first mail via air route from Lac Claire, in accordance with an offer made by the Fairchild Aerial Surveys.

We shall nevertheless be loath to see the great silver bird taking its flight from our midst, even though it bears with it the letters to mothers, wives, and fiancées, written by the exiles of Saint Michel.

Messrs. Kahre and Saunders have been here a week, awaiting an opportunity to do some aerial photography. Today, they are able to finish their work after a four-hour flight. The Fairchild Aerial Surveys may well be proud of these two daring airmen who are among the first to brave the elements in these short and misty winter days. Commercial flying during the winter in Canada will soon become a fact, due in great part to the heroism of men such as these friends of ours.

INTERNATIONAL AIR RACES

Dayton, Ohio, October 2, 3, 4

By Hugh H. Robertson

Assistant Manager, International Air Races, Inc.

APPPLICATION for reduced railroad rates to the International Air Races in October has been filed with the Central Passenger Association in Chicago by Maurice Otto of the Traffic Committee. Reduced rates heretofore have been available for members of the National Aeronautic Association, but this year the Traffic Committee is desirous of extending this privilege to all race spectators as well. It is believed favorable action by the railroads will augment the crowds brought into Dayton by all rail systems. A fare and one-half for the round trip is the usual reduced rate granted.

Technical data and sketches of the winning models in the recent Inter-City Model contest between Akron, Detroit, and Chicago will be distributed by the race committee to boys' organizations to encourage elimination contests in this form of aeronautics, the winners of the various city contests to be entered in the Mulvihill Model Trophy Race in October. At present the race committee headquarters has on hand the data for building the Lauder, Rudy Funk, and Stout Pusher models, copies of which data will be furnished prospective builders on request.

Among the early hotel reservations already made for the October events in Dayton are those of Coker Clarkson, General Secretary, and Clayton Hill, Assistant Secretary, of the Society of Automotive Engineers, whose aeronautic section will hold a technical session during the three days of the meet.

The S. A. E. session will be so arranged that it will not conflict with the business sessions of the National Aeronautic Association, thereby allowing visitors to attend both affairs. The S. A. E. meeting will probably be held in the Engineers' Club of Dayton. Arrangements will be in the hands of the Dayton Chapter of the S. A. E., which will co-operate with the Convention Committee of the International Air Races.

Investigation is now being made as to the best colors to be used in checkerboarding the pylons in order to obtain the best visual results for the fliers. Red and white have been suggested, although heretofore black and yellow have been found best. If red and white are used, the Advertising Committee may attempt to charge this item against a popular breakfast food which checker-boards its packages similarly.

Lieutenant J. B. Kneip, U. S. Navy, stationed at McCook Field as naval observer and liaison officer, has been added to the Advisory Committee to give the viewpoint of the navy in race matters. The appointment of Lt. Kneip to this committee has received the approval of the Bureau of Aeronautics. Lt. Kneip is the only naval officer now stationed in the vicinity of Dayton.

The Convention Committee, recently appointed by the Executive Committee, will have in charge the arrangements for the National Aeronautic Association sessions, including registration, program of committee meetings, rules and order of business, validation of railroad tickets, badges, stenotype reporting, and general information. The committee will also co-operate with the Entertainment and Reception Committee on the annual banquet and annual smoker.

Members of the Convention Committee are: Dr. D. Frank Garland, Chairman; J. G. Collison, Secretary; J. M. Johnson, L. Luzern Custer, E. J. Barney, John F. Ahlers, and Howard S. Smith.

Co-operation in caring for the immense crowds expected at the races has been offered by the Chambers of Commerce of Springfield, Columbus, Xenia, Hamilton, Middletown, Cincinnati, and other surrounding towns. Hotels in these cities will aid in housing the crowds and will facilitate such arrangements greatly in this respect.

Road work has already been started on the Springfield Dayton Pike, the main artery into Wilbur Wright Field. Culverts are being widened and bridges strengthened. Re-surfacing will be started later. Especial attention will be paid that portion of the road in Greene County. Work on the Valley Pike will be started soon.

A Budget Committee, appointed by the Executive Committee, will be authorized to pass upon all committee budgets and check expenditures against such. Members of the new committee are John C. Haswell, Chairman; S. C. Allyn, Paul E. Aekerman, C. H. Paul, Urban O-Theis, and W. R. Craven.

Frederick B. Patterson, President of the National Aeronautic Association, who returned to America from Europe April 23 upon a mission to induce foreign aviators to take part in the International Air Races scheduled October 2, 3, 4, at Dayton, Ohio, gives encouraging reports of his success to this end.

(Continued on page 23)



A collection of photographs sent down from Alaska to the Slipstream Monthly by Lieutenant John Harding, Jr., mechanic to Lieutenant Eric Nelson on the Round-the-World Cruise. (1) Sitka, Alaska, from a near-by mountain top. (2) Planes landing at Seal Cove, Prince Rupert, B. C. (3) Round the World flyers at entrance to Prince Rupert Hotel, Prince Rupert, B. C. (4) Flyers posing with picturesque pioneer settler of Alaska; Hansen in charge of supplies right. (5) Major Martin has a fresh smoke just before hopping off for Seward from Sitka. (6) The smile that won't wear off—Lieutenant John Harding, our own "Jack." (7) Getting ready for another hop at Sitka. (8) Prince Rupert Hotel, Prince Rupert, B. C., where the Round-the-world flyers were quartered. (9) The last close-up before the departure from Seward. (10) The picturesque port of Sitka in the shadow of cloud-mantled mountains. (11) Refueling in calm water.

(Continued from page 13)

Sergeant Harvey shows well the value of carefully laid plans and precautionary measures in the program of this hazardous undertaking. The moment the flyers were reported missing the destroyers *Corry* and *Hull* were dispatched from Seward to the most likely points of refuge the search being directed by wireless stations on Kodiak Island, the station at Kanatak, and a privately operated outfit owned by a cannery company. Sergeant William Rogers, U. S. army soldier, took charge of the station of his company to assist the flyers. Word came of the rescue to the rest of the group at Chignik just as they were preparing their ships to turn back in search of their missing commander and his aide.

IMMEDIATELY a new engine for the *Seattle* was sent down from Dutch Harbor on board the cutter *Algonquin* of the Coast Guard. Meanwhile the remaining three ships, the *Boston*, *Chicago*, and *New Orleans*, pushed off from Chignik at 11:00 a. m. on the 19th and after a flight of seven hours and ten minutes, in which a struggle was encountered with head winds of gale proportions, landed safely at Dutch Harbor at 5:10 p. m., having covered the distance of 400 miles over one of the most desolate sections of the Alaskan Peninsular. A portion of the volcanic region of the peninsular is passed over where Pavlof, Shishaldin, and Makushin Volcanoes were sighted. Pavlof Volcano, 8,900 feet high, and Shishaldin Volcano, 9,387 feet high, are prominent, active, and

almost continually smoking. The latter is in the middle of Unimak Island.

When the new Liberty engine arrived and was installed Major Martin proceeded from Portage Bay with the *Seattle* to Chignik. Bad weather held the ship there until April 29 when, despite the presence of unfavorable conditions, the flyers decided to continue on to rejoin their comrades and hopped off at 11:00 a. m. They had been in flight little more than an hour when heavy fog was encountered. They turned north to take advantage of passes between the high peaks which loomed up on every side and thrust themselves dangerously from out of the white curtain, oftentimes dead ahead and necessitating sharp banks and doubling back to avert a crash. These

rough passes proved a disastrous pitfall for the ill-fated flyers. The moist, warm winds coming in from the Pacific meeting the more frigid blasts from Bering Sea form a perpetual curtain of fog which mantles the barren slopes. The struggle was hopeless from the beginning in the dismal, bewildering cloud of vapor. The most skillful maneuvering was in vain and the inevitable crash came against a hidden mountain side, but fortunately with enough time given to "set the plane down" and avert a head-on smash. The flyers emerged from the wreckage unhurt and started out immediately in the fog and snowstorm to find the Pacific shore line, guiding themselves with a compass. Finding it impossible to find their way the unfortunate aviators retraced their

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steps to the wrecked plane and cuddled themselves beneath the broken wings to nurse their woes. Making a fire from part of the wreckage the two slept in the fuselage of the plane, shielded from the zero blasts by their fur-lined flying suits. Throughout the next day, May 1, the flyers remained in camp near the plane hoping that the heavy fog would break and offer them better means of finding their way back to civilization. Starting out on May 2 they stumbled along in the blinding fog, traveling all day and sleeping in an alder thicket during the night. Unable to find the shore line or a sign of human habitation they were forced to make their way back again to the scene of the crash. On May 3 the weather cleared somewhat and the stranded airmen started out at daybreak for another attempt. In the words of Major Martin in his personal account of the experience:

"The going was slow because of our weakness and struggles with the deep snow. Everything was visible now but the mountain tops but we could not locate any passage to the Pacific and headed for a lake in the distance to the southwest. We camped again in an alder thicket three miles from the lake which we reached by noon.

"We found no people at the lake as we hoped, and so continued following a stream which flowed down from the mountains to the lake. We came to another alder thicket that night and made camp about two miles from the lake. This made a total distance of about five miles covered that day. Without any idea of our location, we followed the stream

southwest back into the mountains, crossed a low divide and found another stream. That night we camped in another thicket. It was a terrible night, I myself was snowblind and Harvey was breaking the trail all day. Both of us had a completely exhausted feeling whenever we stopped.

We left camp at 4 o'clock in the morning, going on down stream, and at 8 o'clock arrived at a trappers' cabin. The head of Moller Bay was only three miles away. Although the cabin was deserted we found food and rested from our weary wanderings. We were so weak we could hardly stand when we reached the cabin. All of the previous seven days we had been existing on liquid condensed food.

Leaving the cabin after resting up a day we proceeded to Port Moller, followed the beach for twenty miles, arriving at the Pacific American Fisheries cannery at 6 o'clock."

Major Martin and Sergeant Harvey left Port Moller May 13 on board the Catherine D which is scheduled to reach Bellingham, Washington, May 26. The Commander and his aide have been ordered to Washington, D. C., by the Chief of Air Service.

* * * *

It is reported that orders have been issued to fit a new Douglas Cruiser for Major Martin who will join the flyers upon their arrival in England and accompany them across the Atlantic. The new plane will be shipped to England from Mitchel Field, N. Y., it is said.

Notes Concerning Other Round-the-World Flights
English

The Vickers-Napier "Vulture" amphibian plane (a plane which can land either on water or land), with which Squadron-Leader MacLaren, Flying Officer Plenderlieth, and Sergeant Andrews, of England, are attempting to fly around the world, is still running a race with misfortune. On the first day's

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The "Vulture," Vickers-Napier Amphibian plane in which three English flyers are attempting a flight around the world.

flight, March 25, from England, to Le Havre, the ship ran into a dense fog, barely averting a crash against the Cliffs along the French coast. The next day the ship took off from Le Havre to Lyon and on March 27 landed at Civita Vecchia, some miles from Rome, Italy. Going by way of Corsica across the Mediterranean from Rome, on March 30, after repairing a wing float, the "Vulture" headed for Athens. The plane landed at Brindisi in a storm.

On attempting to proceed from this point to Athens, a forced landing was made on Lake Korissia, Isle of Corfu. It was necessary to remain there until a new motor was shipped from London. The flight was finally resumed on April 16 and reached Phaleron airdrome, near Athens, the same day.

Leaving Athens the next morning, Cairo, Egypt, was reached after sundown. It took eleven hours to cross the Mediterranean in a strong head wind. Going by way of the Persian Gulf, the flyers touched Bandar Abbas on April 22, and flying over Jask, landed at Charbar at noon on April 23. Resuming the flight after a two-hour rest, they proceeded on schedule to Karchi. This completed the first stage of the flight, they having covered a distance of over 5,000 miles. On the morning of the 26th they hopped off with Nasirabad, 519 miles away, as their next stop. Fate ruled otherwise and at Partu, some 140 miles short of their goal, the reduction gear again gave way and effected another "wash-out" as far as the engine was concerned. After a ten-day hold up due to this mishap, the "Vulture" again took wing and arrived at Parlu, India, May 13. At this writing the total distance the English flyers have covered is 5,580 miles.

FRENCH

Paris-Tokyo Flight

With interest centered for some weeks on the rival efforts of the American and British aviators to fly around the world, there has been a sudden shifting of attention to the whirlwind dash of the French flyer, Lieutenant Peletier d'Oisy, who, without any preparation to speak of and with a standard military plane, covers over 3,000 miles in six days of an attempted journey to Tokyo.

Starting from Paris on April 24, Lieut. d'Oisy, accompanied by Sergeant Vesin, set forth on the 11,200 mile dash to Japan. In seven hours' time after leaving Villacoublay, he passed over Budapest, and four hours later landed at Bukarest, having thus accomplished a non-stop flight of 1,140 miles in about eleven hours.

Resuming his flight from this point at 9:00 a. m. the next morning, he flew via Adrianople, Constantinople, and Konia, arriving at Aleppo at 5:00 p. m. the same day, having completed another non-stop flight of 930 miles in eight hours, during which time he encountered very unfavorable weather, especially when crossing the Taurus Mountains, which he accomplished at a height of about 12,000 feet. Spending the night at Aleppo, the flight was resumed early on the morning of April 26 and mid-afternoon found him at Bagdad—another hop of 460 miles. Next day Bushire was reached. Monday, April 28, found the flyers at Bandar Abbas, 900 miles from Bagdad. In the 29th, the flyers flew from Bandar Abbas, Persia, to Karachi, India, a distance of 770 miles, in a non-stop flight of seven hours. On May 3, they took off and landed safely at Agra, India, in the evening, covering the distance of 800 miles in less than seven hours. During this hop they passed over the disabled plane of the English round-the-world flyers.

Latest reports at this writing find the flyers at Hanoi, Indo-China, where they were heartily greeted by the secretary-general of the colonial government, civic and military officials.

The plane used by the French flyers is a Breguet, fitted with a 400 h. p. Lorraine-Dietrich engine. The route from Hanoi, proceeds via Hong-Kong, Shanghai, Peking, and Seoul. Should the Tokyo objective be reached, there is a possibility that the flyers may attempt to continue the flight eastward across the Pacific and back to Europe via the South American Coast and the Azores.

PORTUGUESE FLIGHT

The Portuguese military aviators, Captain Antonio Paes, Lieut. Sarmiento Beires, and Lieut. M. Gouveria, who are flying from Lisbon to Macao, using a Breguet biplane, have wrecked their ship and are forced to abandon the flight, which it was anticipated would result in a round-the-world affair. The Portuguese flyers arrived at Bagdad on the same day with Lieut. d'Oisy, the French aviator.

Flyers Reach Japan

The three Army World Cruisers led by Lieutenant Lowell Smith successfully reached Paramashiru Island Saturday morning, May 17, from Attu Island. The flyers fought their way through a freezing gale. Sun-

day the ships were being refueled and put in condition for the next hop Monday morning to Hitokaphu Bay, Yectorofu Island, 500 miles away.

A report, May 18, from Canton, states that Lieut. d'Oisy arrived there from Hanoi, French Indo-China, a distance of 500 miles. Weather permitting he expects to hop off for Shanghai, May 19.

Macready Is "Daddy" Now

Lieutenant Macready is virtually "walking on air" these days with the arrival of a fine baby daughter. "Mac's" spirits are soaring in heights which he never hopes to reach with the old Le Pere job.

Loses Leg—Makes New One

In 1913 Marcel Desoutter, a European pilot, fell in a Bleriot plane at Hendon. As a result of his injury in the crash it was necessary to amputate the pilot's leg. Being an engineer and mechanic of unusual ability Desoutter built himself an artificial leg of metal—light in weight and scientific in operation—a vast improvement over the common type of wooden leg.

Since that time the Desoutter Artificial Leg has gained wide prominence in England and other foreign countries. Great numbers of them are being manufactured to supply disabled soldiers of the world war.

The pilot, although still making a flight occasionally, has his time principally occupied in the production of his novel Light Metal Limb, from which sales he is deriving a big revenue.

Barrage Balloon Constructed

An experimental barrage balloon of 20,000 cubic foot volume has recently been constructed from standard rubberized balloon cloth by the Engineering Division, McCook Field, Dayton, Ohio, and favorable weather conditions are awaited for its testing. The barrage balloon is a captive balloon, designed for an altitude of 15,000 feet. A number of these anchored several hundred feet apart would form a high fence about arsenals, ammunition bases, towns, or cities, through which it would be difficult for an enemy airplane to fly without becoming entangled in the anchor cables. Especially would such danger exist at night. Attack by air therefore would have to be by bombs dropped from

altitudes above the balloon positions, and the placing of bombs to strike a target from such an altitude would be a decidedly difficult feat.

This balloon is an adaptation of the Italian A-P (Avorio-Prassone) Observation Balloon, the lobes being utilized as receptacles for gas which is automatically valved from the balloon when the pressure becomes too great, due to increased elevation or temperature. This arrangement of valves, located between the envelopes and the lobes, permitting the passage of gas from the envelope to the lobes and vice versa, prevents the loss of gas and the consequent loss of lift. The lobes have an expansible feature by means of which and through the medium of the valves the pressure in the balloon is held practically constant. The tests will determine the ability of the balloon to reach its 15,000-foot altitude, its stability at this altitude and lower ones, as it is let up and hauled down, under the conditions begotten by the varying degrees of expansion of the lobes.

A small two-wheeled winch, operated by a Ford motor, has been designed and is now under construction for use with this balloon. In operation the winch is staked to a fixed position and the cable is laid along the ground for a hundred or more feet where it is passed over a swivel pulley, held by an anchorage to the ground.

These balloons can be towed to new positions, or if the contemplated move is for a great distance, they can be hauled down, deflated, and transported by truck.

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(Continued from Page 17)

Through his efforts Great Britain, France, and Italy will enter seaplanes in the Schneider Cup Races, to be held at Baltimore, Md., October 25, while an entry from France and Italy is assured for the Dayton Classic.

Sadi Lecointe, famous French aviator, will compete in the Pulitzer speed event during the big meet. The Aero Club of Italy is negotiating with the Italian government toward sending a plane to this country for the same event.

There is a strong possibility of Belgium being represented by a team sent here by King Albert.

Sadi Lecointe will fly a specially built Dewoitine bi-plane fitted with a 500 H. P. Hispano-Suiza motor. The plane will arrive here early in September.

Italy will no doubt be represented by the famous Lieut. Brack-papa, foremost aviator of that country.

Mr. Patterson was accompanied on the European trip by Mrs. Patterson and their little daughter, Fredericka.

The light plane race events scheduled in this year's International Air Race program are opening the way for spirited rivalry between colleges as well as municipalities.

Word comes that "Miss Akron," will represent that city of rubber fame and the ship is now under construction at the plant of the Goodyear Tire and Rubber Company.

The University of Detroit, according to information reaching officials, is building a light plane for the speed and efficiency event. It will be known as "Miss Detroit." Other colleges in the Middle West and East are known to be building small planes in connection with their course of aeronautics.

Three ships are to be entered by the Heath Airplane Company of Chicago, Ill. They are the "Heath Favorite" which won third place in the "On-to-St. Louis," the "Heath Feather," a sport job, and a six-place plane for commercial work.

A-Lighter-Than-Air Show as a feature of the International Air meet is now assured. The most complete display of lighter-than-air equipment ever assembled will be one of the attractions at the Races, October 2, 3, 4.

The exhibition will be arranged with the co-operation of the Army Air Service, the Navy Bureau of Aeronautics, and the Goodyear Tire and Rubber Company of Akron.

The principal items on the program, according to the present plans, will be the presence of the giant Zeppelin ZR-3,

sister to the Shenandoah, now being built in Germany for America. The Shenandoah will also be seen with the ZR-3.

The Army will send the Zodiac, largest non-rigid dirigible in the world; the AC-1, better known as the "Pullman of the Air," because of its enclosed cabin; several TC ships; the "Gypsy Moth" airship and the RS-1. Along with these there will be a great number of free balloons, and "sausages."

The Goodyear Tire and Rubber Company will supplement the exhibit with a group of its products and models of various types of airships.

Although English aeronautical periodicals express the belief that no English planes will be able to compete in the International Air Races, recent communications received from the Royal Aero Club by the Race headquarters in Dayton, Ohio, indicate that considerable interest in the event has been aroused in this body.

Permission has been asked by officials of the club to test models of race planes in wind tunnels of that country instead of bringing them to the U. S. for test in the wind tunnels specified by the rules of the Pulitzer Race.

It is felt that England in making such inquiries must have conclusive plans to enter the contest.

Air Mail Awarded Collier Trophy

The formal presentation of the Collier Trophy to the U. S. Air Mail Service took place on Thursday, February 28, 1924, in the offices of the Postmaster-General. Colonel F. P. Lahm acted as spokesman and formally presented the trophy for 1923 to Postmaster-General New, who accepted it in behalf of "the pilots and other personnel of the U. S. Air Mail Service for successfully demonstrating to the world the practicability of night flying in commercial transportation."

The Collier Trophy was awarded to the Air Mail Service in 1922 for completing a year's operation along the different routes from coast to coast without a single fatal accident. The Collier Trophy is awarded annually by the National Aeronautic Association for the greatest achievement of aviation in America, the value of which has been demonstrated by actual use during the preceding year.



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Clayton J. Brukner and Elwood J. Junkin, who have engaged in aircraft design and operation for ten years, have incorporated in the latest model of the WACO, all the refinements and improvements which have been found necessary for the successful operation of commercial aircraft.

The WACO Seven, the seventh of a series of three-seater model WACOS, is remarkable in a variety of ways. When seen in flight for the first time, it is extremely puzzling how such a short take-off and rapid climb can be acquired with only 90 H. P.

This feature, which is so acceptable to those operating ships in mountainous country where fields of any size are scarce and airdromes unheard of, is explained only by the fact that the WACO was designed for just that kind of country and every effort has been made to obtain the maximum climb with the minimum speed of advance.

The slow speed displayed is such that the impression is gained that the most inexperienced novice could learn to land the WACO in a few hours. As a matter

of fact, it has been flown over the speed course at Wilbur Wright Field with a pilot and passenger aboard, at less than 30 M.P.H.

The WACO is not a large ship, spreading as it does, barely thirty feet, and its load capacity can only be attributed to the efficiency of the wing curve employed and the pleasing attention to detail shown in its construction.

The cockpits are roomy and neatly upholstered in black chase leather. The broad sidewalks make access to the passengers' compartment easy. The cockpit interiors are finished with mahogany dashboards, seats, and floors.

The fuselage, rudder, fin, and landing gear are finished with a special WACO Blue Valspar, and the wings with Valspar Aluminum, which, together with the natural finish spruce struts, makes a pleasing, attractive color combination.

This Company is now working on a new eight-passenger cabin "job" which will be completed and ready for test within six weeks.

Mr. E. Junkin, member of The Advance Aircraft Company, makers of the WACO, explains that there is very little, if anything, wrong with commercial aviation at present except possibly "growing pains."

(Continued from page 11)

structural collapse in flight during these races will do very much to discredit the light plane.

In this discussion low speed or landing speed has been purposely ignored, as this very important item cannot be covered in a speed race. This is the only item, however, which, we believe cannot be given consideration, yet it is not of sufficient importance to risk the substitution of a "competition" which might not be interesting to the public, for a "race" which promises to be SOME RACE.

If, with a capital "I," some one can be found to put up a trophy and sufficient prize money to attract entrants to a scientific competition based upon points which would not be at all dependent upon receiving a gate to reduce the deficit, we might all be very heartily in favor of such a competition, especially if it could be spread over a period of a week, such as the English competition. It is understood that the Government is subsidizing the English competition which is impossible, if even desirable here. We have few Americans in the game solely for the "sport of the thing." American manufacturers want to build a commercially salable plane.

There are hopes of having a cross-country, light plane race for the Rickenbaeker Trophy this year starting from Dayton. Of course a cross-country race is not as spectacular as a closed circuit race, yet it offers a splendid opportunity to test the light plane under conditions that should be conducive to the best all-around plane taking the laurels. In order to hold the interest of the public in a light plane competition or race, they must see the winner WIN on the spot, and know that he is the winner. Their enthusiasm will have subsided if they have to wait for a day or two while the Slipstick Artists are busy "calculating" the winner, and the contest committee is endeavoring to satisfy the storm of protests that might arise out of a complicated situation, such as occurred at Omaha after their so-called efficiency race.

After the battle is over and the race is won I believe all the contestants will thank the contest committee, and particularly Col. Lahn, Russell Shaw, and Carl Sehory, for the simplicity of the rules. The dear public will go home more interested in aviation and the news scribes will report, "a good time was had by all."



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New Loening Metal Wing Adopted by Air Mail Service

Successful tests completed last week by the U. S. Air Mail pilots of a new wing section, the invention of Grover Loening, airplane builder of New York City, insure the prompt start of night flying on the transcontinental route in July next. One of the difficulties faced by the Post-office authorities has been the obtaining of the proper airplane equipment for this work, as the present DH type of plane used by the Air Mail lands altogether too fast and has faulty control at low speeds.

Realizing that the time necessary to build and develop brand new airplane designs, would hardly permit of having equipment ready this coming July, Assistant Postmaster-General Paul Henderson, accepted the proposal of the Loening Aeronautical Engineering Corporation of New York City, to remodel the standard Mail Plane, to obtain the desired characteristics.

This was little over three months ago. Elaborate wind tunnel tests of the Loening No. 10 A wing section, the new design of wing curve, invented by Grover Loening for this work, were made at the Massachusetts Institute of Technology under the direction of Prof. F. W. Warner, and a very careful study made of the aileron system on the wings, to increase the lateral control at stalling speeds. While this work was going on, the engineers at the Loening factory at East 31st Street, New York, developed and tested a new type of all-metal rib for the wing construction made from a special aluminum alloy furnished by the Aluminum Company of America. The most advanced and accurate airplane engineering data was obtained and prompt tests made to verify the safety of every fitting and part. By the early part of April in record time, the first Mail Plane remodeled with the new wings was delivered for test at Mineola. Due to the accuracy of the engineering and wind tunnel tests, it was unnecessary to make any changes or adjustments, and under the direction of Supt. J. E. Whitlock of the Air Mail Service, immediate performance tests were made by a board of Air Mail pilots consisting of C. Eugene Johnson, Wesley Smith, and Dean W. Smith, all of whom are famous for having had over a thousand hours of flying time.

The results of these tests showed that the landing speed had been reduced from sixty miles an hour on the old planes to forty-five miles an hour with the new Loening wing section, and in addition that the high speed had been increased with the new wings from 119 to 131 miles an hour. This record increase in performance was at the same time accompanied by the desired increase in lateral control, thus fully meeting the requirements asked for and carrying the full 500 pounds of mail load. Test trips have since been made

over the transcontinental route, new records for speed being established on practically every run, the trip from New York to Chicago being made in one day. Last week, piloted by Jack Knight, a new round-trip record was made from Omaha to Cheyenne and return, both runs being flown at an average of over 130 miles an hour.

At a conference held a few days ago in Chicago, with Assistant Postmaster-General Henderson and the Superintendents of the Air Mail Service, the adoption of these wings was decided on, and orders to the Loening Company were immediately given to prepare the first ten planes for delivery in July, others to follow thereafter for replacement through the year.

In congratulating Mr. Loening on the success of his work, Postmaster-General Henderson stated: "These remodeled airplanes give us a prompt and timely equipment for night-flying during the year or so that the airplane industry will require to develop the new types of planes carrying a thousand pounds load which the Post-office Department will order from the proposals to be received on June 10 next."

Aero Club of Minneapolis,
Aero Building,
Minneapolis, Minn.

Gentlemen:—We have heard so much favorable comment on the good work "Slipstream" is doing, and just recently a copy of your September issue was brought to our attention by a mutual friend.

We would very much appreciate receiving "Slipstream" regularly and if there is anything we can do for you in this part of the country, do not hesitate to call upon us.

Yours very truly,

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MARVELS OF AERIAL PHOTOGRAPHY

NOT the least of important developments in aviation from both the military and civil standpoint is brought out in the recent remarkable results accomplished by the late types of aerial camera.

Aerial surveys and mapping of great stretches of the earth are now being made by special cameras which take photographs at a very small scale from a height of 16,000 to 30,000 feet. Hundreds of exposures are made and after being carefully trimmed and pasted in their correct position form an accurate mosaic map with the minutest detail shown in exact scale.

President Sherman M. Fairchild of the Aerial Camera Corporation (New York) announced recently, that an aerial photographic mapping project of the city of New York had just been completed.

Three photographic planes flew approximately 3,000 miles, and the entire Greater City of five boroughs—Manhattan, Bronx, Queens, Brooklyn, and Richmond—a territory of approximately 625 square miles has been mapped. The map shows every structure from the contractor's temporary tool shed

to skyscraper; back yards, gardens, and parks with every tree and bush visible; avenues and alleys, streets and unrecorded footpaths; big league ball parks; water front clubs, with their yachts and motor boats; the board walk of Coney Island, and crowds of people appearing like small dots.

Some weeks ago Lieutenant A. W. Stevens, famous Air Service photographer, was taken to a height of over 31,000 feet over the city of Dayton by Lieut. Maeredy, in the veteran Le Pere (P-53) altitude plane, from which point photographs were taken. When one considers that at this height a plane is not visible from the earth with the naked eye, we marvel at the results obtained by the camera lens of objects fully six miles below.

One of the most remarkable aerial cameras used in mosaic map making is the Bagley Tri-Lens type invented by Major James W. Bagley of McCook Field. This camera originally used three lenses, one taking a view hori-

zontal to the ground, the other two lenses each being set at an angle of 35 degrees with the horizontal. It is to be seen that the horizontal lens would give a true picture of the ground, whereas the right and left lenses would take oblique views. In order to have all of the photographs in the same plane it was necessary to perfect a transforming device which would take the oblique negatives and produce a photographic print showing on the horizontal.

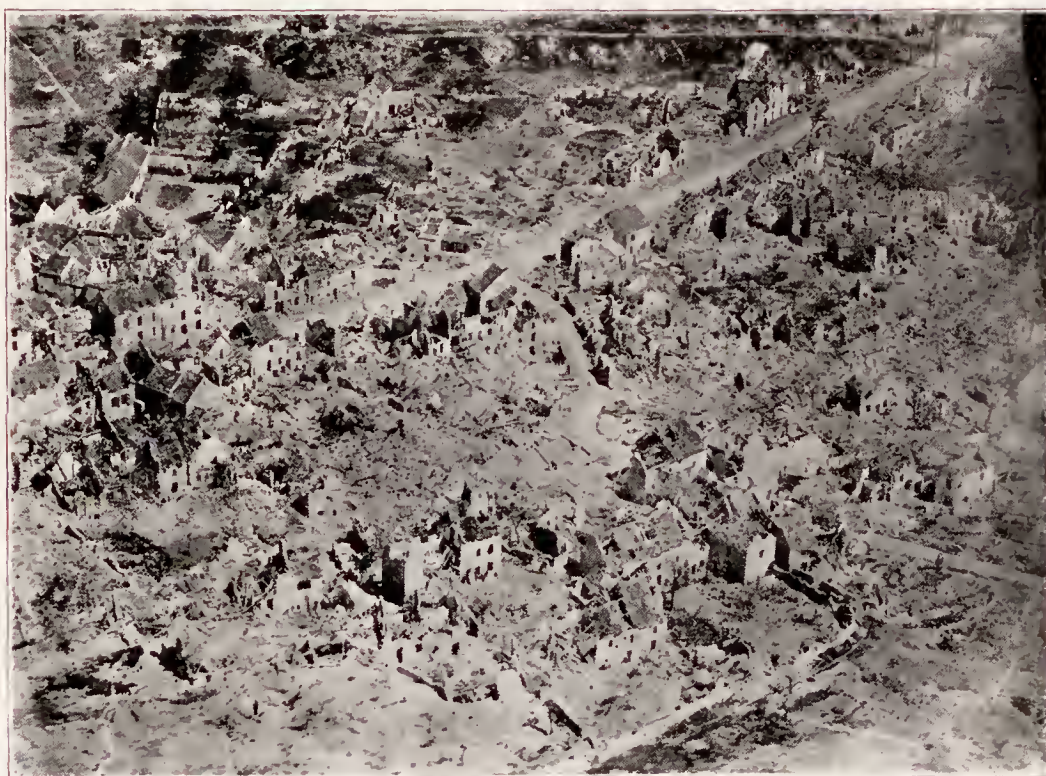
At an altitude of 16,000 feet this camera will photograph a strip about ten miles.

Recently a fourth lens was installed on the camera

which was so arranged as to take a photograph parallel to the line of flight of the airplane and necessarily at right angles to the line of the three original lenses.

To show the quickness and feasibility of this camera, a short time ago 2,200 square miles of territory were photographed in about one hour and fifteen minutes. Photographs were taken at an altitude of 16,000 feet, covering a strip of ground ten miles wide. During the trip

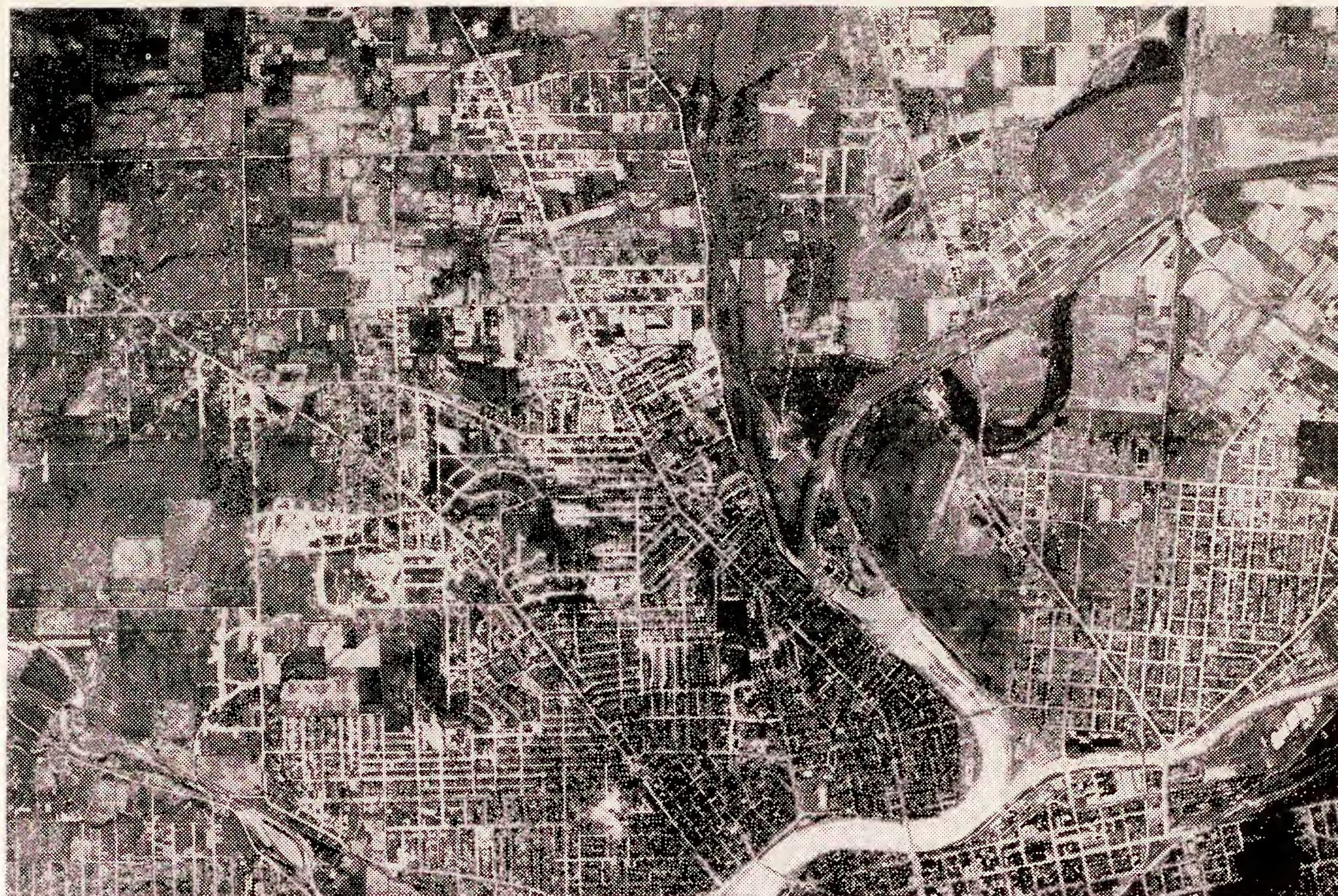
500 negatives were exposed, three of the lenses were used in making direct pictures of the strip photographed, while the fourth lens was turned backward on the course to show the relative position of the other exposures. The scale of these pictures is about two inches to one mile.



Chateau Thierry—famous battle field of American Army in France as seen by the eye of the aerial camera.

THE value of these new aerial cameras is inconceivable to the layman, but to the engineer it opens the way to vastly simplified and speedy results in survey work. Furthermore, when all is said and done, the mosaic map is something far more tangible and comprehensive than the use of the ordinary maps which show but a series of lines. The photographic map shows the terrain exactly as it is observed by the pilot.

The common expression that the Airplane "is the eyes of the army" has a lot of bearing on the aerial camera. In future wars with the use of one of the lately perfected cameras our aviators can soar out over the enemy's lines



Dayton As Seen From Six Miles Aloft

A photograph taken recently by Lieutenant A. W. Stevens with a new type of aerial camera perfected by the Fairchild Aerial Camera Corporation working in conjunction with the Engineering Division, Air Service.

at a height too high to even be seen or heard from the ground, secure within a few minutes photographs of the points desired, speed back to the field photo laboratory where the film is developed and the pictures of the enemy stronghold used to direct attack at the most logical points, all within the period of a few minutes.

Camouflage and cloud haze are no match for the aerial camera in the hands of a clever operator. The use of the new super-sensitized film and color filters makes it possible in many instances to expose objects not at all discernible to the naked eye even at close observation. Oftentimes the ground is almost completely obscured from the aviator by fog, smoke, or haze in the air. By the use of the correct color filter which is nothing more than a sheet of colored glass placed in a cap to fit over the face of the camera lens, the effect is that one of the various phenomena connected with the color spectrum is brought to play and the haze or fog is "cut" through by simply obliterating its particular tinge or hue.

The aerial photographer is often able to expose care-

fully concealed gun emplacements, ammunition dumps, etc., by this process of color selection. Several views are taken of the same section, each view being made through a different filter, and possibly on a different grade of film. The results are startling. Roadways, guns, supplies, etc., invisible on one view, will be brought out in bold relief on others. Thus the aerial camera plays an important role in all military operations.

With the use of the new Bagley camera vastly greater expanses of territory can be secured and with a saving of time when time means everything to the success of the operation. Should our army, during the World War had a series of planes equipped with these cameras the entire western front to a depth of fifty miles could have been obtained in a remarkably short time and undoubtedly made way for destructive operations on the German lines which were not effected through lack of information of reliable character, most of it being available merely from the memory of the observer.

—O—

Captain Land Member of National Advisory Committee

Captain Emory S. Land (CC), USN, has been appointed a member of the National Advisory Committee for Aeronautics by President Coolidge. He fills the

vacancy caused by the recent assignment of Commander J. C. Hunsaker (CC), USN, to London as Assistant Naval Attache.



A Sample of Scenic Beauty Made Possible by the Aerial Camera

(Continued from page 10)

THE shock absorber cords are arranged outside the planes on either side at the top of the chassis tube, and work with a sliding guide plate.

The landing gear design is one of the reasons for the extreme softness with which this plane alights.

The plane will be made with either wheels or floats, depending on the service in which it is to be used. As a freight vehicle it will be used on air lines, between such manufacturing plants and cities as will guarantee or underwrite full loads for the season's operation.

The plane is particularly designed with reference to the carrying of air mail along with express matter, a spacious compartment for mail being provided. With a load of one ton the plane will make approximately five miles per gallon. The wing load on the wing is about nine pounds and the power load fourteen, so that the actual performance can well be gauged by those who know design.

This plane is an enlargement of the former Air Sedan, which this firm flew last summer in passenger work and did over 3,000 miles of flying without a single accident of any kind.

First Colored Skywriting

Inhabitants of Long Island were given their first glimpse of colored skywriting recently, when three SE 5 planes of the Skywriting Corporation of America, piloted by Captains Cyril Turner, E. D. C. Herne, and I. R. MacMullen flew in formation for the purpose of securing aerial view and motion pictures.

What they did not see however, was the new Fokker mail plane piloted by Captain R. H. Depew and carrying photographer Russell, hovering far above the skywriting planes. Russell was busily "shooting" the SE5's with the new Fairchild "Five Mile" aerial camera and he secured some of the finest air views of planes in action ever taken.

Cincinnati to Have Chapter

In Cincinnati a committee of prominent business men was appointed to be the nucleus of a chapter of the N. A. A.

These men are: Arthur Behymer, Moses Strauss, Philip Weyman, George F. Dana, Thomas J. Davis, W. F. Robertson, and Eshelby F. Lunken. Dudley M. Outcalt, secretary of the National Aeronautic Association, is a Cincinnati resident, and is taking a leading part in the formation of a chapter there.

A temporary organization to effect the forming of an N. A. A. chapter also resulted from Admiral Fullam's visit to Indianapolis. The committee was appointed following a luncheon at Tomlinson Hall in which the Admiral was introduced by Brig. Gen. Dwight E. Aultman. Robert H. Bryson, Indianapolis postmaster, is president of the committee there; Fred Duesenberg, automobile manufacturer, is vice-president; John R. Welsh, banker, treasurer; and Col. John Reynolds, secretary of the Chamber of Commerce, secretary.

Committees were also formed in Wheeling, Moundsville, Canton, and Hamilton.

Sadi Hangs Up New Record

Official notice was received April 1 from the F. A. I. that a new world altitude record for seaplanes has been officially homologated as follows:

Class C1 Seaplanes Altitude (France) Sadi Lecointe, Nieuport-Delage Seaplane, Hispano-Suiza 300 H. P., March 11, 1924, 8,980 meters (29,462 feet).

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Illustrated Lecture on the Arctic With References to Proposed Exploration by Air

An illustrated lecture on the Arctic, with particular reference to the projected exploration of the Arctic basin by Naval aircraft, was given by Lieutenant Commander Fitzhugh Green, USN, before an audience composed of Navy Department officers and invited guests in the auditorium of the Interior Department Monday afternoon.

Lieutenant Commander Green's lecture was based on his personal experiences during three years of Arctic exploration with Captain Donald B. Macmillan. The lecture was illustrated with colored lantern slides which depicted life in the far North throughout the Arctic winter and summer months in a most graphic manner. The pictures together with the testimony of the lecturer served to emphasize the fact that the tales of hardship and suffering which have come to be accepted as the inevitable portion of the sojourner in the far North are discounted by actual experience.

Lieutenant Commander Green pictured the Arctic summer both verbally and through photographic testimony as a season of comfort and friendly environment. He cited the firm conviction among explorers that land exists in the unexplored area lying between Alaska and the North Pole as justification of the proposed aerial voyage of exploration by the Navy and pointed to the economic advantages that would accrue to the nation which made good its claim to such land. "Every one who examines the map of this part of the earth's surface in the light of the surrounding geographical configuration recognizes that commercial air commerce between the capitals of Europe and the Orient is a matter of a very few years. The discovery of land in the unexplored area of the Arctic would make such commercial air routes immediately practicable," he said. He stated that five countries are planning expeditions into this region during the coming summer, and spoke of the economic considerations which should urge the United States toward exploitation of commercial routes which pass by the threshold of its territory.

On March 7, M. Barbot, French pilot, made an attempt to better the height record held by Sadi Lecoq. Barbot used a Dewoitine plane powered by a 300 h. p. Hispano-Suiza motor. He was forced down after reaching a height of 34,440 feet.

Neither Barbot nor Lecoq uses the supercharger during their altitude flights.

Road improvements on the various highways leading to Wilbur Wright Field, scene of the International Air Races, October 2, 3, 4, have been started and excellent road conditions are assured from all points leading to the great air field during the big event.

The National Elimination Balloon Race

By Kelly Field Correspondent (*Air Service News Letter*)

The National Elimination Balloon Races are all over; in fact, they went right over the office on their way north. We had to stay open all day to put out information from 5:30 a. m. until 10.00 p. m., and we certainly did put out. The crosses on that big map of the United States show where the different pilots landed. The orange-colored cross indicates where Mr. Van Orman, pilot of the Good-year balloon that won the race, landed, approximately 1,100 miles from Kelly Field. The green cross near him is where Mr. Honeywell landed, piloting the Kansas City Co-operative Club entry that took second place with 1,050 miles. The other two crosses just below indicate where Major Peek, in an Army Air Service balloon, and Mr. Van Thaden, in the Detroit balloon, landed. There is only a few miles difference between the two, but third place has been awarded to Major Peek, who had the advantage in his favor. This qualified the first three to represent the United States in the International Balloon Races to be held in Belgium this summer.

Yes, as hardened to flying as we are, we also got a lot of kick out of the heavier-than-air races held that day. Some of the flying in those races was perfect. That was Lt. Hez McClellan who made those beautiful turns around the pylon in front of the judges' stand. They say that when he landed the top of his wing was covered with red paint that he rubbed off the pylon on those turns. At any rate, the official timers credited him with an average speed of 151.72 miles an hour, which is going some and hangs up a record for DH4B's. We believe Lt. Andrews finished second, averaging 148.18 miles an hour with Lt. Thos. Brooks third, averaging 144.33 miles per hour. The smallest planes in the race were the Sperry Messengers. They went around in record-breaking time. Lt. M. E. Fin took first place with a speed of 110.88 miles per hour, with Lt. Geo. E. Rice and Staff Sgt. B. K. Newcomb second and third, respectively, at speeds of 108.78 and 107.78 miles per hour. Yes, the MB3A's were also in the record-breaking class and furnished one of the greatest races in air history. Lt. E. M. Powers won this event with a speed of 174.7 miles an hour. Lt. R. L. Maughan, winner of the Pulitzer Race in 1922, came in a close second, credited with a speed of 174.4 miles an hour, with Lt. A. C. Strickland third at 172.18 miles an hour.

The Martin Bomber race caused the big sensation, although not in any record-breaking way, their tremendous size making the race very spectacular. The winners and their speed were in the following order: Lt. D. J. Canfield, 114.32 per hour; Capt. L. L. Harvey, 113.39, and Lt. J. G. Williams, 111.44 miles per hour.

Lt. E. D. Perrin and Lt. J. S. Griffith tied for first place in the SE5 race, averaging 154.7 miles per hour. Captain Paul Bock finished third in this event with a speed of 144 miles per hour. All races were three laps

Results of National Elimination Balloon Race

Starting From Kelly Field, San Antonio, Texas, April 23, 1924

Pilot	Aide	Point of Landing	Distance
W. T. Van Orman (Goodyear) Duration: 44 hrs., 4 min., 44:6 sec.	C. K. Wollom	5 miles north of Rochester, Minn., Olmsted Co.	1072 miles
H. E. Honeywell (Kansas City) Duration: 39 hrs., 11 min.	Capt. T. E. Boudinst	5 miles southeast of Sanborn, Minn., Redwood Co.	1042 miles
Major N. W. Peek, U. S. A. S. (U. S. Army) Duration: 32 hrs., 27 min., 15. sec.	Lt. Wm. A. Gray	5 miles south of St. Ansgar, Iowa, Mitchel Co.	1021 miles
Herbert V. Thaden (Aircraft Development Corporation) Duration: 34 hrs., 8 min., 26.2 sec.	S. A. U. Rasmussen	5 miles south-southwest of Dubuque, Iowa, Dubuque Co.	1003 miles
Capt. Edmund W. Hill U. S. A. S., (U. S. Army) Duration: 25 hrs., 20 min., 20 sec.	Lt. G. F. Powell	2 miles west of Moline, Kansas, Elk Co.	565 miles
B. H. Fournier (San Antonio) Duration: 18 hrs., 07:32.		Kaw, Oklahoma, Kay Co.	517 miles
Lt. A. C. McKinley, U. S. A. S. (U. S. Army) Duration: 16 hrs., 46 min.	Lt. L. A. Larsen	Parkeet Farm, Wapanuka, Okla., Johnston Co.	365 miles

around a fifteen-mile triangular course, for a total of
forty-five miles.

Sixteen pilots of the Third Attack Group and fourteen
from the Tenth School Group participated in the aerial

review.

Lieut. H. G. Crocker was kept busy all during the day
piloting a Martin Bomber for the purpose of ferrying
movie camera men who were taking pictures of the vari-

RECOMMENDED BOOKS ON AERONAUTICS

The Chief of Air Service has selected the following books as representing some of the most important works on aviation:

- AERIAL NAVIGATION.** By Zahm. (485 pages) (1911) Portrays in popular terms the substantial progress of aeronautics from its earliest beginning to 1912. A substantial portion of the book is devoted to the development of lighter-than-air craft. \$4.00

AEROPLANE STRUCTURES. By Pippard and Pritchard. (359 pages) (1919) A technical work, dealing in an authoritative way with the applications of well-established engineering principles. \$7.50

AIR NAVIGATION. By Card. (140 pages) (1919) An elementary treatment of pilotage in navigation over land, illustrated with charts and diagrams. \$3.40

AIRPLANE ENGINE ENCYCLOPEDIA. By Angle. (547 pages) (1921) An alphabetically arranged compilation of all available data on the world's airplane engines, intended to serve as a reference book to those interested in any phase of airplane engine design and construction. \$7.50

APPLIED AERODYNAMICS. By Thompson. (292 pages) (1919) Specializes upon aerodynamics as a branch of engineering. Part 1 begins with a general outline, takes up physical theory, experimental methods, and structure of the various parts. Part 2 deals with stability and control. \$12.50

FLIGHT WITHOUT FORMULAE. By Duchene. (211 pages) (1914) Treats in simple language of the principles and problems of flight and of the mechanics of the aeroplane. \$3.25

HISTORY OF AERONAUTICS. By Vivian, Marsh and Lockwood. (521 pages) (1921) A record of how the
- aeroplane has been evolved. Stories of the Wright Brothers and Santos-Dumont, taken largely from their own accounts, and a short bibliography. \$5.00

INTRODUCTORY METEOROLOGY. Prepared and issued under the auspices of the Division of Geology and Geography, National Research Council. (150 page) (1918) Covers briefly instrument, temperature, atmosphere, atmospheric optics, clouds and fogs, forecasting and climate, illustrated with diagrams and plates. \$1.00

OUR AIR FORCE. By Brigadier General William Mitchell. (223 pages) (1921) Shows development of aeronautics in the World War, demonstrating value as a weapon of defense and offense. Outlines plans for future development. \$5.00

COMMERCIAL AIRSHIP. By Pratt. (235 pages) (1920) Author is Chief Engineer of the Airship Department of Messrs. Vickers, Ltd. Work is non-technical, showing development and demonstrating feasibility of the use of lighter-than-air craft for commercial purposes. \$6.50

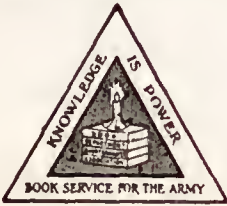
SIMPLIFIED NAVIGATION. By Poor. (126 pages) (1918) Extends in a practical way the science of mathematics and astronomy as applied to navigation of the sea, to the problem of navigation of the air. \$1.75

THEORY AND PRACTICE OF AEROPLANE DESIGN. By Andrews and Benson. (466 pages) (1920) Is in simple and easily understood language and is illustrated with sketches and diagrams. Should be useful to designers, aeronautical draftsmen, and students. \$7.00

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ous races. A complete pictorial review of the balloon race, from the air and ground, was made by members of the 22d Photo Section. The organization started taking pictures at 9:00 a. m. and the last aerals were made at 6:00 p. m. Eight prints of each exposure made were turned out for the press just as soon as the negative was dry, and the last prints were turned out at 10:00 o'clock that night. The Section's exhibit of photographic materials and equipment was well visited throughout the day. A motion picture camera man from the Section shot several hundred feet of the most interesting phases of the races.

One of the features of the day was the parachute jump made by Corporal Conrad of the 90th Attack Squadron. At an altitude of 2,000 feet he threw himself clear of the DH4B in which he was flying, and after falling approximately 200 feet, pulled the rip cord opening the parachute. This jump was especially interesting, in that it was made from a comparatively low altitude, at a point where the jumper was easily visible to those below.

Master Sergeant Bottriell also made a successful parachute jump.

Yes, that's just what every one says. It was one of the best and smoothest running shows they had ever seen. The only near accident was in the case of that civilian parachute jumper, Mr. Bottonfield, who intended to use five parachutes during his jump, throwing them off one at a time. It's a good thing we insisted on him taking along an Army type parachute, in view of the fact that the jump was over an Army airdrome, otherwise he would have been in rather an embarrassing position when his first chute split and his remaining four became so entangled that he could not use them. That was when he decided to use the Army type parachute, else he wouldn't have been "up in the air" very long.

Unless unforeseen complications arise, the following teams will represent The National Aeronautic Association and the United States in the Gordon Bennett Balloon Race, to be held in Brussels, Belgium, June 15:

W. T. Van Orman,
Aide and Alternate—C. K. Wollam.
H. E. Honeywell,
Aide and Alternate—C. W. Timmons.
Major Norman W. Peek,
Aide and Alternate—Lt. Wm. A. Gray.

It is felt that a very strong team has been selected from those finishing first, second, and third in the National Elimination Balloon Race, held in San Antonio, Texas, April 23.

Any profits realized in the holding of the 1924 Air Races will be turned to the aid of some worthy Air Service project, such as the air mail or possibly the building of the Wright Memorial.

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Major E. L. Hoffman, chief of Equipment Section, McCook Field, will assume temporary command of Grisard Field, new flying post at Cincinnati. The field will be used as training headquarters for aviation reserve officers and Major Hoffman will assume command during this period of training.

Charles E. Lay, has taken title to the old farm Subdivision at Blue Ash, Ohio, which comprises some 100 building lots. The tract extends on Cooper Road from Blue Ash Station to the entrance to Grisard Field, thence east to the railroad.

Mr. Lay has divided that part which adjoins the Field into one-acre tracts fronting 100 feet on Northfield Road, permitting private entrance and extending 400 feet back to the Grisard Field line, which would permit private interests to own their own property without occupying the Field proper. Electricity is already on the property and plans are under way to extend Cincinnati city water mains to Blue Ash.

One house is already under construction, and several more are contemplated.

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Dayton, Ohio

Work On Shenandoah Progressing

It is estimated that the *USS Shenandoah* will be ready for flight in June. The reconstruction of the tail sections and the bow of the ship is now being carried on. The deflation of the gas cells in the ship is complete, and the outer covering has been largely removed. New outer cover panels are being prepared to replace sections of the cover that were damaged in the breakaway of January 16.

The construction of the new radio outfit for the *Shenandoah* is well advanced. The work is being carried on at the Naval Research Laboratory at Belleview, D. C. It is not expected that the new radio outfit will be in place by the time the ship is ready to take to the air, but will probably be installed on the ship about June first. This date is dependent upon the date of completion and delivery of the radio generator set that has just recently been contracted for.

The after portion of the forward ear of the airship (Number six) which was originally fitted out with an engine and propeller, will be reconstructed and turned into a radio room for the new set, after the removal of the engine and gears. A new top will be built of somewhat larger size than the present one. There will be space for a large radio compass and two large transmitters and corresponding receivers. There will also be space for two berths so that the radio watch will sleep alongside the instrument.

A part of the space occupied by the present radio set in the forward part of ear number 6 will be occupied by the new radio generator set. This will be completely enclosed in a sound-proof box and mounted on vibration-dampening supports so as to reduce the noise and vibrations reaching the operators and instruments.

CONVERT NORTH ISLAND INTO WOODED PARADISE

The desert wastes of North Island, San Diego, the site of the Naval Air Station, will soon be enlivened by a touch of green. Over two hundred and fifty ornamental trees and forty cherry trees are being set out on the island, which does not naturally have a very extensive vegetation.

NEW SEAPLANE RECORD FOR FRANCE

The Contest Committee of The National Aeronautic Association announces that the F. A. I. has recognized a new Seaplane altitude record for Class C-2 Seaplanes. The details of the record are:

ALTITUDE—(France) Maurice Hurel C. A. M. S. 36 flying boat, 2 Hispano-Suiza engines, 300 horse power, at St. Raphael, February 2, 1924, 6,368 meters (20,887 feet).

CRUISERS AS AIRCRAFT CARRIERS

It was announced in naval orders at Devonport, that the English cruisers *Glorious* and *Courageous* are to be converted into aircraft carriers. The *Glorious* will, it is stated, be converted at Rosyth, while the conversion of the *Courageous* will be carried out at Devonport dockyard. The two cruisers are of 18,600 tons, and their armament includes four 15-in. and eighteen 4-in. guns.

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Remington-Burnelli to Build Huge Passenger Plane

The Remington-Burnelli Aircraft Corp., 25 W. 45th St., N. Y. C., is constructing a large airplane at Maspeth, L. I., powered with two 520 horsepower Atlantic Galloway engines and arranged for a special commercial purpose.

The new Model No. 2 is a development of the Remington-Burnelli No. 1. In it is incorporated all the advancements of the first machine with new details of construction and design learned during the extensive test flying of the R-B No. 1, which was the first plane to be built on this new principle of multiple engined airplane arrangement.

The R-B No. 1, as the world's largest commercial airplane, thoroughly proved the airworthiness, efficiency, and superior accommodations of the new type. It is a far-reaching advancement over other multiple engined planes. On account of its broad departure from conventional proportions and designs, the building of the R-B No. 1 was very speculative.

This airplane proved easily capable of carrying twenty-five passengers with a good commercial performance. It was flown extensively, under all sorts of conditions, by many pilots. Some had never flown a multiple engined airplane before. The consensus of opinion was to the effect that the plane handled easily and in the conventional manner, maneuvering easily and accurately.

In making a forced landing on Staten Island the airplane was damaged by nosing over. Later the plane was thoroughly wrecked by rough handling in moving it. The extent of the damage sustained while in transit at Miller Field made reconstruction of the plane inadvisable and it was decided to salvage the machine.

The new Model No. 2 is a biplane with a wing area of 1,525 sq. ft.; 84 ft. span; U. S. A. 27 wing section with scout truss and metal covering. The landing gear has two 56x12-inch wheels. The fuselage with the engine and pilot's compartment is improved and the cabin can comfortably seat thirty passengers. In plan the fuselage tapers to the tail and a door is provided on each side.

The two Atlantic Galloway engines, provided through co-operation of the Engineering Division, McCook Field, give the airplane a very rugged power plant. These engines, of Scotch manufacture, were the largest engines in production in England at the close of the war. They weigh 1,365 lbs. each, and are of the heavy duty, slow speed type, turning a maximum of 1,500 R.P.M., giving a very good propeller efficiency. The propellers used are 11 ft., 4 in. in diameter.

Completely loaded, the plane will weigh 17,100 lbs. It has a fuel and cargo capacity of 8,050 lbs.; speed, 108 M.P.H.; landing, 55 M.P.H.; climb, 4,000 ft. in ten minutes; maximum ceiling, 12,000 ft., and duration of 6 hours. It is planned to attempt to establish a new 2,000 kilo weight carrying, as well as other records during the test flying of the new machine.

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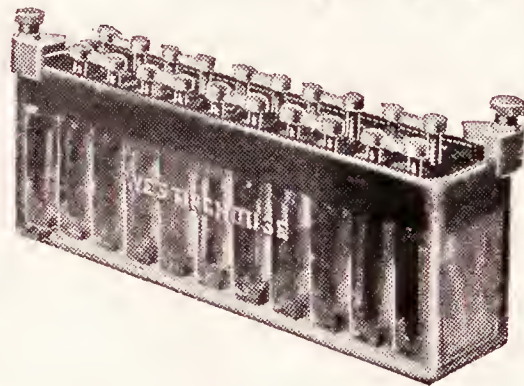
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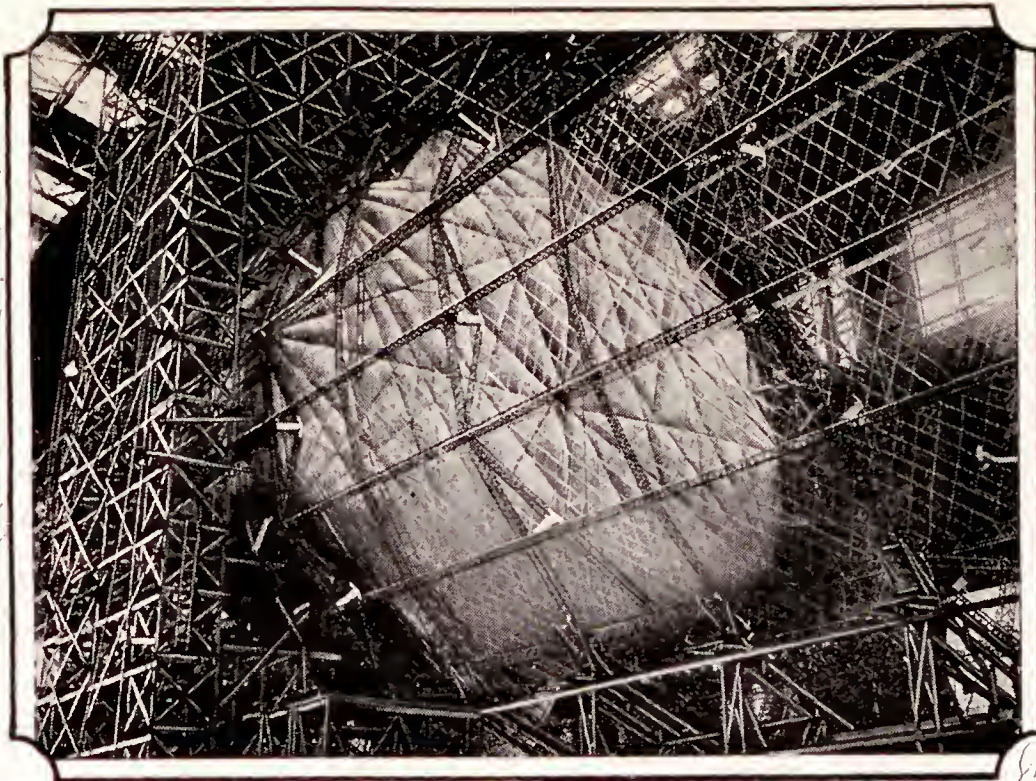
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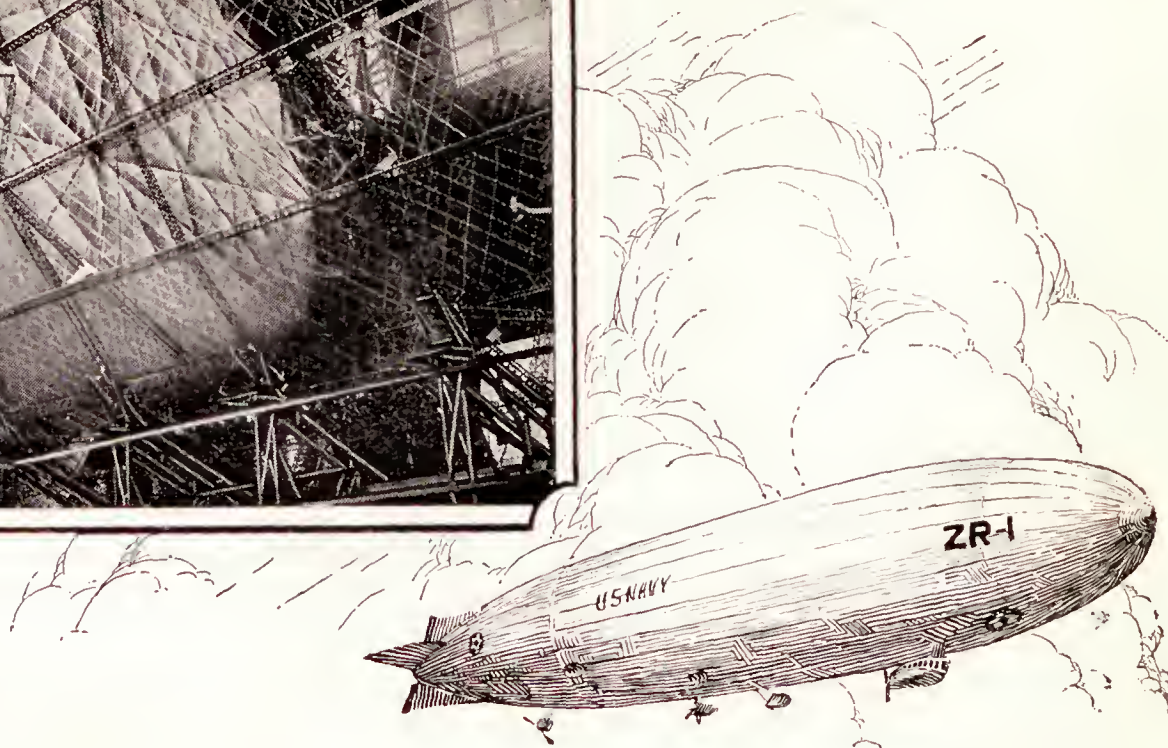
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The Shenandoah was entirely designed and constructed by the U. S. Navy. At the left is shown one of the partially inflated gas cells inside the framework.



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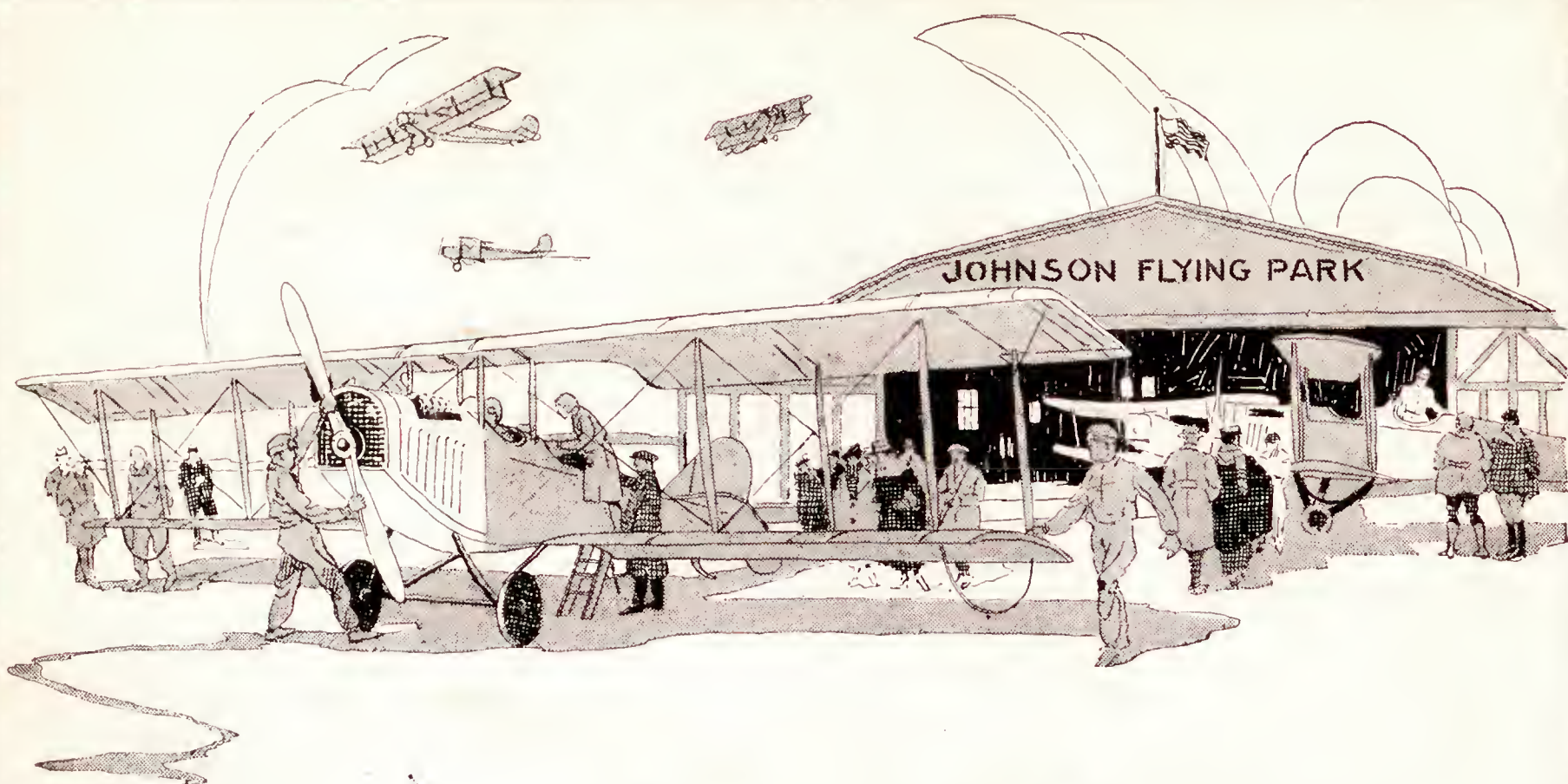
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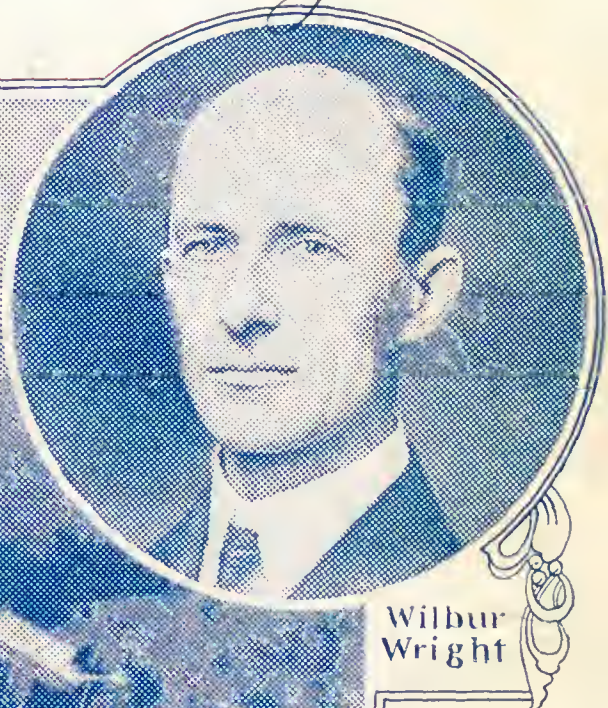
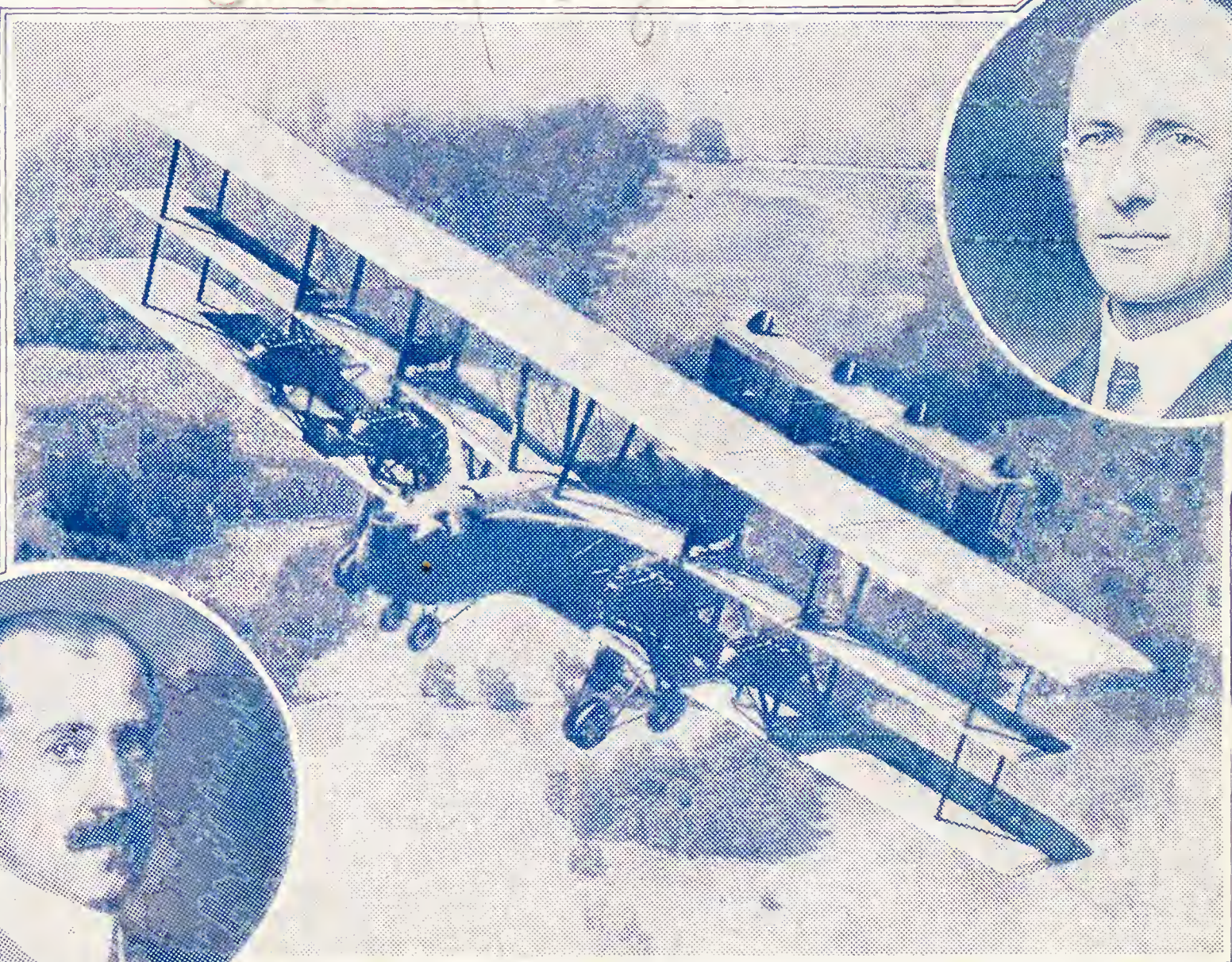
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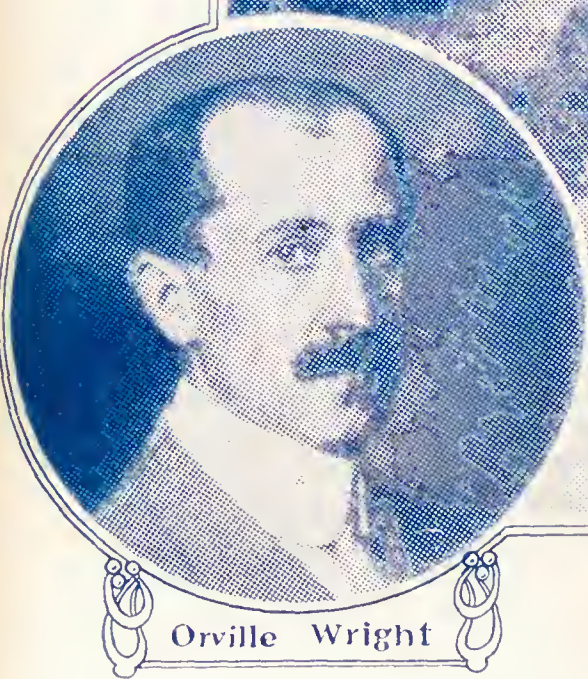
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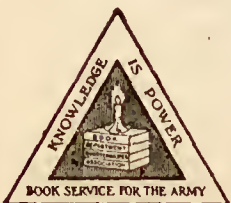
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Slipstream

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VOL. 5 JULY No. 7

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FRED F. MARSHALL..... Editor and Business Manager



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The accompanying illustration may seem out of place in an aeronautical organ but in this period of Independence celebration our minds conjure up those lurid war days when our ground forces groveled through Flanders mud and prayed fervently for more airplanes which never came. Our Air Service troops stationed on the other side wondered what the pick and shovel had to do with the Air Service. Consequently, the frontispiece and the story on the opposite page, written by a British "Tommy", will touch the heartstrings of every American soldier who saw service abroad.

FLANDERS MUD

THE fields of Flanders are full of memories for the man in uniform who goes over them again. The following description of the battle fields is given by a British vet who saw action on them years ago:

The mud of Flanders, particularly in the Ypres sector, still tells the story of the war. On other sectors it has generally been possible to obliterate the scars of the great bombardments; and even where ruined buildings remain, the soil itself is cultivated, or, at any rate, leveled and healed. But in the Ypres sector the flat marsh lands remain in many places much as they were left when the armies dispersed. There are whole tracts of ground, between villages whose names are history, still pitted and churned. There are splintered trees and dumps of wire and scrap iron, and the debris of gun emplacement and dugouts. It is like this around Poelcappelle and Passchendaele, Pilkem and Boesinghe.

I stood on a hummock north of Boesinghe and tried to send my imagination back to an April day of 1915—that day when, with a steady wind blowing toward the British lines, the Germans launched the first gas attack of the war. The extreme left of our line on the Yser Canal, where the Canadians joined up with the French, received the cloud attack, before any defense against gas had been dreamed of. There was that choking smell in the air, and after a spasm, men dropped in agony. It was before the days when the wobbling sound and the dudlike detonation of gas shells, followed by the white, heavy ball of cloud were a commonplace of trench life. After that first attack the science of anti-gas measures was born. It began with socks and handkerchiefs and bits of rag dipped in water, and the primitive bottle respirator. Closing my eyes, I heard the Strombos horns on the wind, and recalled an alarm at night behind the lines, when we sprang up and adjusted our helmets in an evil darkness alive with fear.

The railway runs once more through those villages whose names have gathered so much splendor. A man who did not know in what neighborhood he was could sit by a carriage window today and read something of the war to right and left of him. And the name on each station building would give him a thrill. The places themselves like those on all other sectors, are all renewed. Vlamertinghe would make the old soldier gape. Langueمارcq would puzzle him. I had been asked by a friend to locate an estaminet in

Graphic and Touching Story of a Recent Visit to Noted War Sector

by

A British Tommy

Poperinghe, and a certain position where the big guns had remained for some time. But I could find no trace of either.

The thought that one is actually standing on ground so sanctified numbs the mind. There is no step you can take, for miles and miles, without marveling. Those few years ago the very air was every human sensation. Here walked and crawled and lay boys from little village shops. Mayfair bachelors, shepherds, athletes, clerks, their hearts eaten away by longing for home. Here, there was wild courage and sickening terror. Here it was, on the very spot on which I stood, that some weary man flattened his body against the earth, before the tornado, and saw the night rent into great jagged flames. Here last letters were written, crude wills made, laughter and youth offered up at a word in solemn sacrifice.

I came into Ypres at dusk, and found any number of hotels where everybody spoke English, and catered for sightseers. As this was not the season for sightseers (who all move in flocks together at a given signal from the calendar) the hotel people were obsequious, and prepared to overcharge me with disarming smiles. But the Muse Clio, whose duty it is to record the deeds of heroes, came down from Parnassus, and led me through the gathering darkness to adventure. Near the Mening gate I found what had once been the site of gun emplacements, but was now a kind of hotel presided over by an ex-officer. I went through a yard full of crumbled concrete into a room where they gave me food and wine, and climbed to my bedroom by a staircase that seemed to be suspended between earth and heaven. It ended weirdly on a dizzy platform, on which was a door. Through this I passed to my bedroom. The window looked out across the water at the gashed ramparts. The sky was crowned with stars, and the night was as still as though one of those sudden hushes after the fury of guns had fallen around men. Once more ghosts crowded about me, and my sleep was troubled and left me unrefreshed.

The next morning I went out into warm sunshine to see Ypres. It will soon be a typical show place. The shops opposite to the Cloth Hall are in the best tradition. Souvenirs are sold, and, as I said before, there are hotels waiting with open doors to receive tourists. But it is not all like that. Everywhere you find a violent contrast. While one-half of the town seems to be treking itself out to capture sensation-

hunters, the other half is trying to build something out of the tragedy of shattered houses and street. All day long there is the chime of pick and hammer and the rasp of saw and shovel.

I walked round the ramparts, going slowly by the little groups of crosses and looking out across the flat lands to Dickebusch and Kenimel beyond it, where there are still German dugouts; to St. Elói, Hollebecke, and Mesines Ridge. I watched the men at work below, and could see the new Ypres being shaped and chiseled. "For all the ghostly, gasping ruin of the Cloth Hall and cathedral," said I to myself, "something of all this murdered holiness will surely cling to the new red bricks." What a ground to build upon! In the Spring sunlight the men hummed and whistled, and on the ramparts birds sang above desolation; and I could have sat there all day, drinking good wine as an accompaniment to thoughts too deep for speech. But I went on presently, back to the Menning Gate, from the Lille Gate, and walked out along the interminable road that leads through Hooze and Gheluvelt, each with its inheritance of violence and valor. On these roads of the war the mind takes on the old pattern and is bathed in the old atmosphere. Forgotten jests return; phrases, strong curse words,

peculiar intonations in a comrade's voice; and, most of all, the songs—the jaunty, arrogant songs that cock their feathers, the mournful dirgelike songs that partially hide rare humor under a transparent grouse: "I don't want to die," "Pack up your troubles," "We are Fred Karno's Army," "My old man's a fireman," and the beautiful tune of "Après la guerre," with its quaint, unlicensed words set to the old air of "Sous les ponts de Paris." A hundred shades of emotion succeed one another in an hour. Tears and laughter are mixed in the mind as it remembers, and finds how nearly it had forgotten.

But there is little enough laughter in these rambles, although Sanctuary Wood is at peace and Hell Fire Corner is tidied up. And I think of all that I saw I was moved most, not by ruined cathedrals or medieval buildings in tatters, not by dead trees or old walls laid low, not even by cemeteries—no, not even by the nameless graves in the cemeteries. Of all I saw I was torn most by a single lowly cross of wood, with no name upon it, standing crooked and weatherstained, in a field near Poelcappelle—in a field all gay with the sunshine of a new Spring. The world's next poet might be moved to an epic by a lesser thing.

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ILLUMINATING THE AIRWAYS

By R. R. Blythe

Network of Brilliantly Lighted Emergency Landing Fields Planned in Use of New Device

A device for expediting the installation of lighted emergency fields and terminals for aircraft has been invented by

Lt. Colonel Harold E. Hartney of Washington and New York. His invention not only marks the flying field for the guidance of the pilot but affords a very simple and efficient aid to incoming planes for landing at night.

One of the most interesting and practical features of the new device is that it costs comparatively nothing to erect and maintain because it is an advertising billboard for day and night use.

The Bureau of Standards, The National Advisory Committee for Aeronautics, The National Aeronautic Association and the Airways Section of the Army Air Service have approved it in principal and cooperated with Colonel Hartney in its development.

Air routes now being developed by Major General Mason M. Patrick, Chief of Air Service generally follow the main highways and all the emergency landing fields along the airways lie close to the main motor roads. This billboard landing device is set up in accordance with the general terrain, sometimes replacing a portion of the fence and again lying at right angles to it. Pilots passing by day or night can tell at a glance just how they should approach that particular field to insure the best landing and are guided to earth by an indirect system of lighting that has proven in practice to be the most efficient yet discovered. Expensive flood lights and search lights such as the public have been familiar with in the early days of night flying are no longer necessary on these fields, because the device simplifies landing and makes it entirely unnecessary to light up large areas or reveal obstacles that might be dangerous. In other words the pilot sights along the billboard and then lands as easily as he would in the daytime. In fact it will be easier for a novice to make a landing at night with this device than it would be in the daytime.

From a standpoint of National Defense this system of lighting flying fields will revolutionize the lighting systems employed in war. Instead of cautiously lighting brilliantly a home aerodrome and thereby drawing enemy bombers like moths to a candle, all emergency landing fields, and there will be thousands, will be havens for our pilots returning

from night flying expeditions. Enemy machines on the other hand will be at a loss to determine just which field to bomb. It was a com-

mon trick of both enemy and friendly planes during the war to follow their adversary home and bomb most unmercifully the unfortunate raider attempting to land at his home station. The moment the aerodrome was lighted up, down would come a hail of bombs, wrecking not only the pilot and his machine but also the valuable hangars and equipment.

During the World War, Colonel Hartney was in command of the celebrated First Pursuit Group of the American Air Service so successfully employed by Brigadier General William Mitchell in special air tactics at Saint Mihiel and the Argonne. Since the Armistice he has been building up Aerial Navigation in this country. He was Chief of Training in the Office of the Chief of Air Service upon his return from Europe and later organized the Civil Affairs Division now known as the Airways Section. His activities in the Pulitzer Air Races and in general flying all over the country establishing landing fields are well known. There are over three thousand landing fields already charted in the United States and it is probable that this number will be doubled during the coming year. Local committees are cooperating enthusiastically in the establishment of these fields and as soon as Colonel Hartney's device is installed, flying by night will become common. The United States Patent Office recently allowed Colonel Hartney ten claims on his patent application and the equipping of all fields will mean the speeding up of Air Travel.

Associated with Colonel Hartney at 1457 Broadway, New York, are two other pioneer pilots, Harry A. Bruno, former Vice-President of the Aeromarine Airways, Inc., who made the first complete aerial circumnavigation of the Great Lakes in 1921, establishing Airports and Richard R. Blythe, organizer and director of the Aeronautic Executives' Association, who accompanied Mr. Bruno on the Great Lakes flight as a representative of Insurance interests. These three men believe that with the campaign to abolish the old time billboard well under way, this method of utilizing a new type of billboard for a national purpose will find favor with the public as under the Hartney patents they become a vital necessity in places where they will be anything but objectionable.

AIRPLANE REUNITES FAMILY

The airplane accomplishes many unusual things. It brings medical aid, food and supplies in an emergency to persons living in inaccessible places, who, due to climatic or other unusual conditions, are cut off from other means of communication; helps the farmer by spraying his cotton plantations, his orchards, etc., with poison powder to destroy parasitic insects; breaks up ice jams in swollen rivers, thus avoiding floods and the consequent wholesale destruction of property which would otherwise result; and, in short, as we have had occasion to mention before, is ever ready for service at a time when every other agency in the way of transportation is rendered impotent through unusual circumstances. For the path of the airplane is unrestricted—it can go anywhere, its only requirement being a fairly good place in which to land and take off.

The incident which we are about to relate happened recently in Hawaii. Warrant Officer Osburn, 27th Infantry, stationed at Honolulu, received orders transferring him to Fort Sam Houston, Texas. His thirteen-year-old son, Bobby, was at the time visiting some friends at the Kilauea Military Camp near Hilo. The Transport *Cambrai* was scheduled to stop at Hilo before proceeding to Honolulu and then on the voyage across the Pacific, and Bobby was notified to board the Transport at Hilo. When his parents got on board at Honolulu and found no trace of their son, they became exceedingly worried, as was only natural. It appears that Bobby was not informed of the sailing hour of the *Cambrai* from Hilo, and when he arrived at the dock the boat had left. Warrant Officer Osburn immediately notified Colonel H. L. Landers, who in turn notified General C. P. Summerall, Commanding General of the Hawaiian Department.

Arrangements were made for Robert to be brought from Hilo by airplane, the transport being scheduled to sail at noon the following day. Three Army planes, piloted by Lieuts. W. C. Goldsborough, Everett Davis and Jesse Adams, Air Service, left Wheeler Field for the Big Island. Incidentally, several Island records were established from that time until the planes or, rather, two of them returned to Honolulu. The airmen arrived at Hilo at 6:15 p.m., but on account of darkness were forced to land in a newly plowed cane-field at Hilo instead of going to the flying field at the Volcano. The landings were made without incident.

Preparations were made for the return trip the next morning, and at 8:30 o'clock Lieut. Goldsborough, with Bobby as passenger, attempted to take off. The condition of the field made it impossible for the plane to pick up speed, and just as it left the ground it ran into some brush which became tangled up with the propeller. The plane turned sideways and crashed to the ground. Although the plane was badly damaged,

Lieut. Goldsborough escaped injury, and Bobby's only injuries were a bump on the head and a scratched nose. Young Osburn was pulled out of the wreckage and immediately announced that he was ready to try it again. The boy mounted the seat in another plane piloted by Lieut. Davis, who took it without mishap. Two hours in the air brought the airmen and their passenger to Fort Kamehameha, where the latter was transferred to a waiting automobile which made fast time to the pier, the youngster boarding the Transport and meeting his overjoyed parents just thirty-five minutes before it sailed. The excited youngster related to his relieved parents the wonders of the flight from a seat above the clouds and expressed his desire to take another flight. The trip from Hilo to Honolulu was made in the fastest time ever accomplished by an Army airplane over this route, the distance being 210 miles, over three wide channels of water of 80, 20 and 45 miles, respectively.

There is no doubt that the Air Service gained staunch friends in the persons of Warrant Officer Osburn, his wife, and, especially, their son Bobby.

FAIRCHILD CAMERAS FOR BRAZIL

The photographic apparatus ordered by the Brazilian Government from the Fairchild Aerial Camera Corporation has been delivered and Lieut. A. W. Stevens has sailed for Brazil.

He will act as aerial photographic instructor for several weeks and will demonstrate the Fairchild camera to the photographic division of the Brazilian Air Service.

The Fairchild camera has been adopted by the Brazilians as the official camera. They expect to train some of the Air Service personnel as expert aerial camera men and Lieut. Stevens will be temporarily in charge of this work.

It was only after a thorough investigation of the aerial cameras on sale in America and Europe that the order was placed with the Fairchild Company.

AERIAL PHOTOS FOR SALE

Mr. F. S. Lahm of Paris, France, reports that there is available and for sale in Paris by Louis Godard, son of the original aeronaut Godard, a valuable collection of about 1500 historical aeronautical photographs. They date from 1870 to 1910. In addition to the fifteen hundred photographs there are about five hundred aeronautical lithographs. He asks 10,000 francs for the collection.

Anyone interested may communicate through the National Aeronautic Association, 1623 H Street, N. W., Washington, D. C.

AIR MAIL AND OUR DEFENSE

THE late war has proven that the airplane will be the most important weapon in our future national defense. To appreciate the direct relation between Air Mail and national security, it is necessary to review the accomplishments of the present Air Mail Service, and to understand the value of commercial aviation to our military organizations.

The first regular air mail service in the United States was established by our government between New York City and Washington, D. C., on May 15, 1918. Continuously since that date we have enjoyed the more rapid delivery of our mail in various sections of the country. On Sept. 8, 1920, the Post Office Department completed the establishment of a trans-continental air mail route between New York City and San Francisco, which is now the only air mail service in operation by the government.

Since the inauguration of the first route until Dec. 31, 1923, the Air Mail has operated daily in all kinds of weather, and has carried mail a total of over 6,000,000 mi. More than 225,000,000 letters have been delivered by this service, which has established the remarkable record of completing 92 per cent of its trips on schedule.

Each year the Air Mail efficiency is notably increased. During 1923, over 1½ million miles were flown. More than 65,000,000 letters were carried, and 96 per cent of the flights were completed on schedule.

Up until the present time the Air Mail has been merely an auxiliary to train service, transcontinental mail being taken from the trains at various points in the morning, advanced by airplane during the day, and returned to trains at night. To obtain the maximum efficiency of the Air Mail Service, airplanes must fly through the night. The Post Office Department demonstrated by a five-day test last summer that night flying is not only possible but that scheduled service can be maintained with the same regularity as the day service.

During this test mail planes left New York City and San Francisco each morning. In the evening their mail was transferred to night mail planes, at Chicago and Cheyenne respectively. During the darkness the New York mail was carried to Cheyenne and the San Francisco mail to Chicago. At daylight the mail was again transferred to other planes, which fin-

*First Radio Address to Foster Interest
in Aeronautics Delivered from the
Willard Broadcasting Station
WTAM, Cleveland, O., by
Lawrence D. Bell*

*Vice President and General Manager,
The Glenn L. Martin Co.*

ished the trips. In this manner, mail was transported from coast to coast in each direction in 27 hr., without interruption or mishap.

To obtain this rapid and valuable service the installation of special ground equipment was necessary.

The landing fields between Chicago and Cheyenne were effectively lighted. Aerial lighthouses were built and equipped with searchlights of 450,000,000 candlepower. Along the route emergency landing fields, properly lighted, were established every 25 mi. In addition, beacon lights that flashed twenty times per minute were installed every 3 mi. to guide the pilots over the route.

In recognition of the remarkable efficiency of the present Air Mail, and realizing the tremendous value of 30-hr. mail service between the eastern and western sea coasts, Congress has recently appropriated additional funds to make night flying between Chicago and Cheyenne a permanent part of our Daily Air Mail Service. This great advancement in the transportation of transcontinental mail will be a reality yet this summer.

The Air Mail will therefore soon be rendering a new and valuable service to the public and business worlds. It will be delivering important letters across our continent in less than one-fourth the time required by any other present means of transportation. Furthermore, the revenue from this service will be more than sufficient to pay all operating expenses.

The Post Office Department will issue Air Mail stamps in denominations of 8, 16 and 24 cents. The country will be divided into three zones—eastern, central and western. Our important mail will be carried by these fast airplanes between any points in each zone for 8 cents; from one zone to another for 16 cents; and from coast to coast for 24 cents.

When one considers that frequently transcontinental mail is sent special delivery, at a cost of five times the regular postage, to gain a few hours at the most in the delivery of the letter after destination is reached, it seems only reasonable to expect that such important letters will be sent by Air Mail, at a cost of 24 cents, whereby nearly four days of transportation time can be saved.

It is to be expected that Air Mail Service will meet with such financial success that it will be rapidly expanded by the Post Office Department and commer-

cial companies operating under government contract, serving an increasing number of cities.

As cities and communities provide additional municipal airdromes, and new airways are established, and lighted for night flying, more and more our country will receive the benefits of this modern method of mail transportation. Furthermore, the installation of these necessary ground facilities will result in more general air commerce. Passengers and much of our merchandise will be carried by airplane, in competition with existing means of transportation.

Thousands of modern aircraft, operating commercially in every part of our country will be a great potential weapon of national defense. It is admitted by the military authorities in all countries that the airplane is the most important and destructive implement of war ever developed; that a warring nation without adequate air strength is doomed to defeat; that the only effective defense against aircraft is airplanes. The airplane is the only weapon of national defense of value in time of peace. European nations have realized that commercial aviation is so important to their national security that they have fostered private operation of aircraft by assuming a part of the operation expense. As a result of this government subsidy, hundreds of airplanes are carrying passengers and merchandise daily throughout the various European countries.

The thousands of mail and commercial airplanes which we should have for the faster transportation of mail, passengers and merchandise would not only provide airplanes that could be readily converted into war machines if emergency arose but, more important, would keep in training thousands of pilots. This great commercial operation would also provide hundreds of trained ground organizations so important to the successful operation of either commercial or military aircraft. It would provide airdromes everywhere for our military aircraft, that will be necessary to protect our cities from bombing planes in case of war. It will provide airways for the movement of our military aircraft over this big country, day or night, and perhaps most important, it will provide a healthy commercial aircraft industry which could be converted at a moment's notice to the manufacture of military and naval airplanes.

The Air Mail has given us a new method of transportation, which, if given the proper support by the people, is destined to solve our problem of national defense.

Commercial Airplanes That Are Paying Propositions

Three and five place machines. Hiso motors and parts. Standard parts and equipment. Write for catalog.

LINCOLN STANDARD AIRCRAFT CORP.
LINCOLN, NEBR.

A LONG FLIGHT OVER THE AIRWAYS

Major Frank M. Andrews, A.S., accompanied by Major S. W. Fitzgerald, A.S., recently completed a long flight over the airways from Kelly Field, San Antonio, Tex., to Bolling Field, D. C., and return, making the outward trip in an elapsed time of 33 hours and 5 minutes and the return trip in 34 hours and 45 minutes. As regards the flying time, the two airmen made considerably faster time on the trip to Bolling Field, 14 hours and 30 minutes against 18 hours for the return trip.

Flying a DH plane, the start from Kelly Field was made at 6:10 a.m., and going by way of Dallas, Texas; Muskogee, Okla.; and Springfield, Mo.; they arrived at Scott Field, Ill., at 3:55 p.m. same date. Landings were made at Dallas and Muskogee for gasoline and oil. They encountered moderate southwest winds at 3,000 feet from Kelly Field to Scott Field.

Leaving Scott Field the following morning at 6:30 a.m., they arrived at Bolling Field, D. C., at 3:15 p.m. same date. Landings were made at Fairfield, Ohio and Columbus, Ohio, for gas and oil. Surface winds were south to east, with moderate northwest winds at 5,000 feet.

After a stay of five days in Washington, the airmen departed on their return trip from Bolling Field at 6:30 a.m., and arrived at Scott Field at 4:00 p.m. same date. Landings were made at Moundsville, W. Va., and Fairfield, Ohio, for gas and oil. Strong northwest winds prevailed from Bolling to Moundsville, with moderate variable winds from the latter station to Scott Field. Several rain and thunder storms were encountered en route.

Leaving Scott Field at 9:30 a.m. the following day, the airmen arrived at Kelly Field—over same route as the northbound trip—at 6:15 p.m. same date. One landing was made at Muskogee, Okla., for gasoline and oil. Strong northwest winds prevailed from Scott Field to Dallas, Texas, and variable winds from there to Kelly Field.

Major Andrews stated that the service on the airways, Kelly to Scott Field, was good but inadequate, due to insufficient personnel, and that communications were poor; but that the service on airways, Scott Field to Bolling Field was excellent, and that communications were good. He further stated that the route from Muskogee to Scott Field, via Springfield, Mo., by following the railroad is over from very good to fair country for forced landings and is much freer from fog than via Kansas City, and that practically all Kelly Field pilots with whom he has spoken prefer the Springfield route to the Kansas City route.

AERO FACTIONS OF CHICAGO UNITED

*Stirring Address by Rear Admiral William F. Fullam, U. S. N., (Retired)
Explains N. A. A. Policy*

By Terence Vincent

THREE hundred persons, representing all phases of Chicago's aeronautical activity, were present in the red room of the Hotel LaSalle recently to hear discussions of the subject and to see the four splendid reels of warlike aviation films shown by Rear Admiral William F. Fullam, U. S. N., retired.

Chicago's spirit seems, aeronautically speaking, about to blossom out into a metropolitan consciousness. Thirteen years ago it took Robert Fowler seventy-two flying hours, spread over thirty-five days, to span the continent, west to east, the first time in an airplane.

"Now the airplane has passed the 'plaything' stage," says Fowler. "My plane held but twenty gallons of gasoline, while now the continent may be spanned in one nonstop flight within thirty-seven hours, as the T-2 did last year. Lieut. Maughan will probably see both coasts this summer in the same day, going better than three miles a minute."

Whether or not the National Aeronautic Association is destined to bring aeronautic coherence to Chicago, it was quite certain from the applause for aviation in general last night that there is a great desire for all to boost together for the city and help Chicago take its right place in the sky-traveling sphere.

"There are two kinds of birds," said David L. Behncke, president of the Commercial Flyers' Association, in his address. "The parrot talks much and flies little, while the eagle seldom talks and is a good flyer. So it is, there are many of us in Chicago vicinity who wants to be like the eagle, and are even willing to teach the parrots how to fly if that will boost the game more effectively here."

C. A. Livingston of the Illinois Manufacturers' Association, said I. F. Dains of Monmouth, Ill., chairman, and the entire I. M. A. aviation committee would cooperate to aid aviation for the state in every way.

William P. MacCracken, one of the founders and at present governor at large of the N. A. A., said that the N. A. A. was determined to get for Chicago the aeronautic progress it rightfully deserved.

A plea for a square-mile landing field, to be built in the lake a half mile off shore, was made by William Hale Thompson, former mayor.

"The key to becoming the aviation commercial center of North America is a good centrally located landing field," he said. "If we can get Congress to erect a sea wall containing a mile square in that thirty-foot or less water off our shore, we can get plenty of excavation dirt and other debris to fill it and have it ready for use within two years. Tunnels can connect it with the postoffice, so that the mails can be hurried rapidly from plane to office, and vice versa. It is about time we stopped talking and got some action."

Almost in direct contrast to that talk was Admiral Fullam's remark that most aircraft can easily be equipped to land readily on either water or land.

It was then moved by Mr. Thompson that Admiral Fullam head a Chicago committee to go to Washington at once to begin work to get the federal appropriation through for the proposed mile-square lake-front aerial terminal. This was carried unanimously and Admiral Fullam accepted the appointment.

FAIRCHILD CAMERA PLANE RETURNS FROM CANADIAN PHOTOGRAPHIC FLIGHT

A Curtiss Standard photographic plane, owned by the Fairchild Company and piloted by Kenneth Saunders, has returned to Garden City after operating in the Canadian North Woods during the winter.

Saunders, accompanied by Photographer W. Kahre, left Garden City last November for Grand' Mere, P. Q. The two men had many interesting experiences while photographing the territory above Grand' Mere. More than 3,000 miles were flown; many of the flights being made in temperatures varying between 30 and 40 degrees below zero. The wheels of the plane were

replaced with skis for taking off and landing on the snow. Kerosene had to be used in the radiator instead of water, and owing to the intense cold it was often necessary to heat the base of the motor with a blow torch before it could be started.

On one flight over snow-covered mountains Photographer Kahre leaned too far over the fuselage of the plane with the result that his eyes were frozen shut. Incidents such as those, however, give an idea as to the hardships encountered by the airmen who were the first on this continent to carry on consistent aerial photographic work in Canadian territory.

(Reprinted from Aviation Weekly)

PUBLISHER'S NEWS LETTER

We hear varied comments on the project to move McCook Field to the new site in Dayton. While it is generally agreed by practically everyone who knows anything about the progress of our aviation that the activities of McCook Field should be decreased rather than increased, Dayton seems to look at McCook Field as its particular "pork barrel" from which it is to draw increasing returns. The best evidence of this hope, which up to the present has been kept very much under the ban of silence, is found in this month's "Slipstream" which purports to give the real Dayton point of view in aeronautics. It states:

"At the present time the architects are still busily engaged in mapping out plans of buildings and construction work in connection with the proposed new home of the Engineering Division. Tentative plans, linked with the proposed sale of the five abandoned air fields, will aggregate a sum of \$10,000,000 for the purpose of erecting permanent buildings. The expansion made possible by the move will mean an annual payroll of from \$2,000,000 to \$5,000,000 (McCook Field now has the fourth largest payroll in Dayton). It will give employment to from 3,000 to 5,000 skilled workmen. It will mean the building of hundreds of new homes. It will give Dayton further world-wide publicity. It will increase Dayton's population many thousands. It will furnish a fitting memorial to the Wright Brothers. It may result in the location here of an air academy surpassing the West Point and Annapolis institutions. It will advance the educational opportunities and standards of the community. It will focus the attention of the world upon Dayton's activities. It will attract the manufacturer of aircraft. It will draw thousands of desirable visitors. It will add to Dayton's reputation as a

precision center. It will be splendid evidence of the progress and patriotism of Dayton people.

* * * *

The above will make interesting reading for Congressmen and Senators when the moving is considered. If Dayton only knew it, it is its own worst booster for the project. One only has to recall the ridicule that was first heaped on the Wright Brothers by Dayton, and how Dayton let the Wright Company run along without much typical Dayton foresight until some New York financiers paid about three quarters of a million for the original company's patents. When the war came there was great aircraft activity in Dayton. Factories, about to be curtailed in their normal business, were looking for "war orders." About \$17,000,000 was spent in Dayton for aircraft, not to mention the Liberty engine parts contracts. Such companies as the National Cash Register and Delco devoted almost all their efforts to aircraft parts manufacture. The Engineering Division of the Air Service, which was originally located at Langley Field, was put on trains and moved to Dayton by one of its then leading citizens, Col. E. A. Deeds. The site selected was a dangerous one for experimental flying as has been shown repeatedly by the crashes at McCook Field. After the war Dayton tried to sell the huge Dayton-Wright aircraft plant to the government for a new McCook Field Aircraft Factory. And now \$400,000 has been subscribed in the "swiftest and most successful money-raising campaign ever conducted in Dayton." With a \$10,000,000 expenditure in prospect, an increasing payroll and tripling the personnel, Dayton can only be praised for its business acumen for wanting to keep McCook Field within its limits.—L.D.G.

SLIPSTREAM'S REPLY TO AVIATION WEEKLY

On the opposite page is reprinted an editorial from the *Aviation Weekly* an eastern periodical, bearing on the recent article written by the editor of *Slipstream* concerning the moving of McCook Field.

It was not so long ago that the publisher of *Aviation* attached considerable importance to an alleged "inside pull" held by *Slipstream* in Air Service circles. When this propaganda failed to develop the results hoped for by the publisher of *Aviation* the tide of criticism turns to a general tirade against Dayton's aeronautical aspirations. Consequently in every instance where *Slipstream* purports to boost the cause of Dayton, the publisher of *Aviation* attempts to show that Dayton schemes are against the interest of himself, particularly, and everybody else in general.

So much aversion is felt in Dayton toward the publisher of *Aviation* that on the occasion of his recent visit to Dayton, one of the leading Daily papers of the city denounced the policy of entertaining an individual who has so often publicly expressed antagonistic views toward the efforts of Dayton citizens to build up its aeronautical prestige.

Recently this publisher printed an article under the title: "Where The Money Goes," wherein the payroll of McCook Field is presented in such a way as to distort the figures in the eyes of the public, thereby influencing public sentiment against the apparent waste of taxpayers money in exorbitant salaries and unnecessary work.

It is absurd to claim that McCook Field employees are overpaid. Such might have been the case in some instances during the war but this was true in every line of work in that period, and McCook Field was perhaps among the least erring even then. Consequently, to state simply that "a Legal Advisor is hired at \$5,700 per year, a Chief Accountant at \$5,200, three Aeronautical Engineers at \$5,000, and so on, is poor proof that such salaries are excessive, however, they may seem so to the casual reader of the editorial since there is nothing with which to effect a comparison. Should we go on to tell that McCook Field has, as a result of low salaries, lost a greater portion of its most efficient men the situation takes on a new light. It is true, nevertheless that, one of the most troubling problems of the Civil Service Department is to compete with the outside in securing the

right men and holding them for specialized work at McCook Field. If anything, the greater part of McCook Field personnel is underpaid and the long list of resignations in important sections of the post verify this statement.

Aviation also plays up the point that \$60,000 per year is being paid in rental for the present site of McCook Field which is valued at \$900,000. This site is worth vastly more were it available for other use. No doubt the owner of the site could realize several times the amount in rentals were the field available for real estate development or for commercial factory sites.

It speaks all the more for Dayton, on the other hand, to recall that she has furnished a bigger and better site just a mile or two away where there will be no rent to pay whatsoever.

Now, concerning Dayton's ridicule of the Wright Brothers. Alas, Alack! that this should be listed as one of the city's shortcomings. True enough Dayton ridiculed the Wright boys, they also voted against their first plans for a railroad claiming that the locomotive was "a smoky, noisy nuisance." But surely that is nothing against Dayton—merely a trait of humankind—a universal tendency of the race.

How queer too, that the publisher of *Aviation*, a self-styled pioneer in aeronautical journalism should fail to recall the incident connected with the first flight of the Wright Brothers at Kitty Hawk. If we remember correctly it was our eastern friend, James Gordon Bennett, then owner of the *New York World* who "canned" a reporter for sending in the "fake" story concerning the flight of the Wright Flying machine.

Again, *Slipstream* brands the statement of *Aviation's* publisher concerning "War orders," as incorrect and little short of an open insult to Dayton's most esteemed citizen, and benefactor—John H. Patterson (Deceased). It is a false assertion to claim that either the Delco or the National Cash Register Company were "looking for" war orders. At the outbreak of the great war the National Cash Register Company actually refused to take war orders so long as the United States was not involved. But when the United States declared war in 1917, President John H. Patterson sent a personal representative to Washington to place his entire factory at the disposal of the government.

Because of its reputation for work requiring precision, the company was given contracts to produce parts which required the highest type

of skilled workmen and mechanical equipment. Mr. Patterson coined and placed in every department of the factory the slogan, "War First, Business Second, if there is any time for business."

He refused to accept contracts on a strictly cost plus basis. He said it was not right to do work for the government on a basis where the more he spent the more he made, because the tax payers of the nation had to bear the burden—and to think that *Aviation* slings mud at a man like that. Even if *Slipstream* was published in the east it would take strong exception to such an injustice.

After all, Dayton is not so sure that War Department officials will consider seriously the thought of moving McCook Field to the eastern coast. If the next war is to be fought in the air certainly the most vulnerable spot for foreign invasion from the air will be our eastern coast line.

Such work as the Engineering Division handles, incorporates the very "secrets" which spells supremacy and success in war times. A couple of bombs and the Engineering Division is gone in a puff of smoke. Our defenses will have to suffer many reverses before an enemy air fleet could reach the interior as far as Dayton.

GORDON BENNETT CUP BALLOON RACE

Brussels, June 15, 1924

WITH an extreme absence of the squally conditions which attended the Balloon classic of 1923, and ended in disaster to several of the race entries, seventeen balloonists got away successfully just outside of Brussels on the afternoon of June 15, all confident of winning the Gordon Bennett Cup in this fourteenth competition for the trophy—the entries represented seven nations.

A great throng of over 200,000 people assembled to witness the take off of the graceful gas bags.

As Lieutenant Ernest DeMuyter, Belgian aeronaut and winner of the trophy for three consecutive years, arose in the *Belgica* a dozen bands broke forth with the national anthem, changing to the strains of the "Star Spangled Banner" as the American, W. G. Van Orman with the *Goodyear* left moorings.

On board the *Goodyear* were provisions for twenty-two days and a special radio set was installed to keep the aeronauts in touch with the earth in case of emergency. After the sorrowful disasters of last year a "safe and sane" spirit seemed to prevail throughout the program. Each of the American crew were equipped with parachutes. Captain Honeywell, another of the well known American entries lifted off successfully with the *Uncle Sam*.

A mild north to northeastwardly wind was blowing as the *Belgica* arose, but soon freshened and carried the Belgian bag toward the French frontier. As the *Uncle Sam* lifted from her moorings the wind veered to the west and drove the bag east toward Holland and Germany.

Captain Paul Armbruster's *Helvitia* (Switzerland) and Lieut. La Brousse's *Ville de Bruxelles* (Belgium) also

headed toward Germany and were seen on the horizon at twilight with the other American and Belgian bag.

Major Peck and Lieut. Grey, the two remaining of the American crew, left with the S-12 at 6:35 p.m., followed by the Spanish *Hesperio*, piloted by Pilot Casas at 6:40 p.m.

The following day the *Uncle Sam* came down at Rouen, while the Italian balloon *Crampino*, piloted by Major Joseph Valle reached Fecamp. The British *Banshee III*, piloted by Major Baldwin, came down at Auboue, near Briey.

Atmospheric conditions for ballooning proved very unfavorable and the second day found the greater number of the seventeen entrants floating lazily over western Europe. After twenty-four hours of flight, none of the bags had traveled any great distance from the starting point. It became a matter of endurance and ability to utilize every little breeze.

Word was received on June 18, that all of the balloons were down and that Lieut. DeMuyter had again won the trophy, having traversed the English Channel and landed his bag at St. Alban's Head, near Edinburgh, approximately 600 kilometers from the starting point. Captain Honeywell wins fifth place which marks the nearest point to winning the trophy the American crew attained in the contest. Van Orman and Major Peck, the two other Americans finished twelfth and fifteenth respectively.

A rousing public demonstration was accorded the winning pilot by the Aero Club and the Brussels citizens in general. The American crew credit the astonishing scientific resources of Lieut. DeMuyter in maneuvering his balloon as responsible for his success.

RACING THE SUN

AFTER having been twice thwarted by minor mishaps in an attempt to fly across the continent between dawn and dusk, Lieutenant Russell L. Maughan, "air speed demon", will again make a try for the same objective at an early date.

As we go to press preparations are being made to begin the flight from Mitchell Field, Mineola, Long Island with the first period of favorable weather conditions over the extended route. The flight will be attempted after plans similar to those mapped out for the two previous attempts, with stops for fuel and repairs at Dayton, Ohio; St. Joseph, Mo.; Cheyenne, Wyoming; and Sal Duro, Utah.

Lieutenant Maughan made his first attempt on June 9, 1923, flying from Mitchel Field to Avenue City, Mo. Minor motor trouble forced the pilot to abandon the remainder of the flight. Again on July 19, 1923, the pilot started from Mitchel Field and succeeded in reach-

ing Rock Spring, Wyoming, a total distance from the starting point of 1,972 miles. Although several hundred miles from the final goal the flight was recognized as spectacular.

The plane used by Lieutenant Maughan in these flights is the diminutive Curtiss Pursuit modeled along the same lines as the famous R-6 army racing planes. The plane is capable of maintaining an average speed of 160 miles per hour.

A crew of mechanics is stationed at each of the landing points where the ship is carefully, but hurriedly, inspected and refueled for the next hop.

The flight will start from Mitchel Field at 2:22 o'clock in the morning, eastern standard time. The pilot hopes to reach Crissy Field, on the Pacific Coast of California, by dusk of the same day, consuming in all some seventeen hours to complete the trip.



The accompanying illustration shows the type of Curtiss Pursuit plane (P. W. -8) to be used by Lieutenant Russell L. Maughan on his trip across the continent. Minor changes have been made after data obtained from failures in the two former attempts. The Curtiss D-12 engine has been changed to low compression with a hope that the less "high strung" features of this type of engine might prove more reliable. (Insert) Lieutenant Russell L. Maughan.

MAJOR MARTIN GOOD SPORTSMAN

Major Frederick L. Martin, former commander of the American Round-the-World Expedition, who is now in Washington and looking none the worse after his harrowing experience in the wild regions of Alaska, requested, after a conference with the Secretary of War and the Chief of Air Service, that Lieut. Lowell H. Smith continue in command of the Round-the-World flight. A plan had been seriously considered by the War Department to send Major Martin with a new plane to Europe to rejoin the flight and command it during the trip across the Atlantic. Major Martin explained his attitude in a letter to the Chief of Air Service, under date of June 3, as follows:

"My dear General Patrick:

I am very grateful to you for your continued confidence in me and for your telling me of your willingness to have me resume my place as commander of the World Flight.

It was discussed with you before we started, and it was agreed that if any of us had to fall out, the flight would nevertheless go on. The success of this great undertaking is the essential thing and not the wishes or desires of any of the fliers.

It was my misfortune to meet with an accident and since then Lieutenant Smith has had to carry on. The responsibility for a perilous part of the journey has rested on him and he has borne himself well.

While there is nothing I should like better than to rejoin the flight and again take command, by that time a considerable part of it will have been accomplished without me.

In fairness to Lieutenant Smith, who succeeded me in command, I think he should so continue and himself bring the flight back to the United States.

I, therefore, request Lieutenant Smith be notified that from now on he will be in full charge. I wish him all success in his conduct of the remainder of the flight around the world, and I hope to join in welcoming him and the other fliers when the flight is ended."

The Chief of Air Service received the following letter from Major K. Kumagai, Acting Military Attache of the Japanese Embassy, under date of May 22:

"I am very glad that your brave world flyers have succeeded in arriving at my home land, notwithstanding bad weather and a long dangerous course. The flight between Attu and Kashiwabara especially commands admiration.

I heartily congratulate you upon their success, and I extend my best wishes for the success of the remainder of their flight."

In a letter of May 28, to Rear Admiral Frederick C. Billard, Commandant of the Coast Guard, the Chief of Air Service expressed his sincere appreciation and thanks for the splendid cooperation and assistance rendered by the Coast Guard to the Army Flight, stating that the

crossing of the Pacific could not have been effected at the time without the assistance of the Coast Guard; that in turning over to us entirely the Coast Guard Cutters HAIDA and ALGONQUIN to convoy the airplanes across the Pacific and distribute supplies, it was realized that the Bering Sea Patrol program had to be materially modified; that all of the Coast Guard personnel assigned to this mission showed a personal interest in the matter and took great pride in the success of the flight; that when ever an emergency arose they cooperated to the full extent of their ability, thus enabling the world flyers to carry on in the face of apparently insurmountable barriers. In conclusion, the Chief of Air Service stated:

"In recording one of the most interesting and thrilling aeronautical exploits of contemporary history, your well organized and efficient force, both in your Headquarters and in the Bering Sea Patrol, have played a major part, and upon behalf of the World Flight and the Army Air Service, I wish to convey to you not only my deepest thanks, but my congratulations upon the successful accomplishment of this flight which you have made possible. Will you kindly do me the favor of personally expressing my gratitude and congratulations to your Headquarters force, to the officers and men connected with the Bering Sea Patrol and such other members of your organization as have cooperated in this enterprise."

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INTERNATIONAL AIR RACES

Dayton, Ohio, Oct. 2, 3, 4

Lieut. E. E. Adler, well known in aeronautical circles, has been named by Major A. W. Robins, Commanding Officer at Wilbur Wright Field, as Executive Officer for the Races. Other orders have detailed the following personnel for the Races:

First Lieut. Samuel C. Eaton Jr., Communications officer,

First Lieut. Harold A. Bartron, Officer—Property,
Major George A. Brett, Officer—Reception, Housing, Entertainment.

Major H. J. Knerr, Officer in charge Airplane Messenger Ser.,

First Lieut. W. J. Hanlon, Mess Officer,

First Lieut. Leon E. Sharon, Officer charge of Publicity—Pres.,

Major J. H. Rudolph—Engineer Officers and Operations,

First Lieut. C. E. Thomas—Supply Officer.

Capt. L. J. Harris of McCook Field, and Lieut. L. V. Murphy, 6th Inf. Jefferson Barracks, Mo., have been detailed to the Races to supervise arrangements for the Parking of automobiles. These two officers handled this work at St. Louis last year, and so excellent was their record that they were again asked for this year, and the War Department has complied with the request.

One of the features for entertainment for visitors will be the Comedy Club dance, to be held in Memorial Hall on the evening of Thursday, October 2. Arrangements will be made to take care of several thousand couples.

Dayton trolley car lines, leading toward the Field may arrange to supplement service from their terminals into the Field by large busses. Inasmuch as such service will be over streets and roads other than those with heavy traffic from the automobilists, this will be considerable help to the Traffic Committee.

Copy and photograph for the official program is now being collected, and bids for the program invited. All advertising will be eliminated from the program this year, the cost of printing being borne by the Retail Merchants' Association as its donation to the cause. It is expected that the program will be more beautiful than any heretofore, as considerable more photographic and art work will be included.

Advertising of the International Air Races has been conducted to date over the crowds at the Indianapolis Speedway Automobile Races; the Carpentier-Gibbons

Fight at Michigan City, and the aeronautical exhibition at Louisville, Ky. In addition, delegates to the National Kiwanis Convention at Denver; the International Rotary Convention at Toronto; the Liederkrantz at Chicago; the Gyro at Detroit; the Christian Endeavor Society at Cincinnati, and the National Grotto at Indianapolis, have been furnished advertising matter for distribution. Plans are being made for additional conventions, including the National American Legion Convention at St. Paul in September. The advertisements consist principally of literature dropped from the air, billboards and exhibition flying.

Advance sale of reserved box seats will begin earlier this year than heretofore. Tickets are to be on sale about the middle of July. Many boxes have been requested by large manufacturers, advertising agencies and other corporations desiring to entertain their clients as guests during the races. One large insurance company is offering a free trip to the Races to its fifty star-salesmen this summer.

The Housing Committee has issued instructions that hotel reservations should be made early. Accommodations for three hundred delegates to the N. A. A. Convention are held at the Hotel Miami and delegates to the Convention will be instructed to notify headquarters of their election so that they may be cared for.

The Airship Manufacturing Company of Hammondsport, N. Y., has indicated its purpose of flying to the Races two dirigibles which will carry Race advertisements on their flight down to Dayton. It is possible that one of these dirigibles may be the *Gypsy Moth*, and an exhibition of field spraying may be given for the benefit of the farmers attending the races.

Another exhibition may be an endurance test over the city during the races by one of these small dirigibles.

Present arrangements are that the Press Stand for the Races will be set up on the roof of the center hangar at the Field. Telephone and telegraph service, as well as typewriters and other facilities will be installed.

Engraved invitations to distinguished persons throughout America, will be sent out during the early part of August. Those invited will include the Federal Bureau Heads, members of the Senate and House of Representatives, State Governors, Mayors of large cities, foreign ambassadors and attaches, foreign and local Aero clubs, aeronautical manufacturers and operators, and officers of the N. A. A. Association and its Chapters.

(Continued on Page 19)

A PRIZE FOR AERONAUTICAL ACHIEVEMENT

To commemorate the pioneer achievement in aeronautics of the Wright Brothers, the Dayton Section of the Society of Automotive Engineers proposes to give a medal annually as a prize for the most meritorious contribution to the science of aeronautics reported to them during the year. The contribution to, or the discovery in, the science and art of aeronautics may include advances in aerodynamics, development in the construction of airplanes, their power plants and accessories which will increase their efficiency or reliability in performance or flight, such as fuel systems, control mechanisms, instruments for aerial navigation, and the like. Improvements of a nature having mainly a military application, such as ordnance or aerial photography, are not included in the list of subjects for which this prize may be awarded. It is the intention to award the prize for contributions designed to stimulate increased non-military use of heavier-than-air craft.

The prize may be competed for by any individual citizen of any country, or group of not more than two individual citizens, without restrictions excepting only that officers of the parent Society, officers of the Dayton Section, members of the Contest Committee and members of the Award Committee are ineligible.

The award will be made for the intrinsic merit of the achievement itself, rather than for the merit of the paper describing it. Flight tests are considered highly desirable and it will be advantageous to the competitor to be able to include in the paper a complete report in regard to flight tests carried out under proper conditions in the presence of unbiased observers. Flight tests, however, will not be absolutely insisted upon, as it is recognized that a proposed improvement might be such that tests by an individual would be financially impossible and yet the improvement would be clearly evident to a competent Award Committee. The paper should be plainly labeled with the name and address of the author. It should be forwarded to the Wright Memorial Committee, Dayton Section, Society of Automotive Engineers, Inc., c/o The Engineers' Club of Dayton, Ohio.

The Award Committee will be appointed annually by the Contest Committee of the Section, and for 1925 consists of Prof. E. P. Warner, Massachusetts Institute of Technology, and H. M. Crane, President of the Society. In addition, an airplane designer and a test pilot will be designated. These will preferably be secured from the Air Services of the Army and Navy. On account of uncertainty of assignments in the Air Services, it is not possible to give the names at the present time.

The paper describing the achievement for which the medal is awarded shall be presented originally before the Dayton Section of the Society, either by the prize winner or, if this proves impracticable for any reason, by some member of the local Section appointed by its officers. The award for 1924 shall be on the basis of papers received up to December 31, 1924, and shall be announced thereafter as soon as the necessary work in checking up the various papers received and the data contained therein can be completed. The Dayton Section reserves the right to withhold any award if, in the opinion of the Award Committee, no paper of a proper standard has been submitted. The Dayton Section reserves the privilege in future years of restricting the competition to a narrower field of endeavor than is announced for 1924. However, any such restrictions shall be announced by January 1 of the year during which they are operative.

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Largest Assortment of Airplanes

Sopwith Camels, Snipe, Martinside F4, Avros, DH6s, Standard J-1, JN4Ds, Canucks, Bristol-Fighters, TM Scouts, Thomas-Morse side by side dual control, Thomas D5, Bellancas, Boeing sea and land planes, 5 place LWF, Nieuport-Macchi land plane (sport), HS2L flying boats, motors and spares.

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"THE STORE FOR MEN WHO CARE"

Bramson's

21 W. Fourth St.
Hats and Haberdashery

(Continued from Page 17)

The Race Committee has requested of the War Department the detailing of Capt. L. L. Snow, Air Service Liaison Officer, to aid in the entertainment of the foreign military and technical attaches. A similar request has been lodged with the Navy Department for the detail of W. D. Thomas, Commanding Officer U. S. Naval Station, Anacostia, D. C., to aid in entertaining the naval and technical attaches.

Both these officers served in a similar capacity last year, and because of their experience and acquaintance, are desired in Dayton this fall.

Information booths during the Races will be established at Union Station, the Miami and Gibbons Hotels, near the Chamber of Commerce, and near Third and Main Sts. There will be in addition a general information booth at the Field. In these booths will be representatives of the Ticket Committee, salesmen of programs, and representatives of the Housing Committee to aid visitors along these lines.

Present arrangements are that the city will be decorated during the races. Street decorations will include Ludlow, Jefferson and Main Streets, from First Street to the Railroad. The Field will be decorated with flags of Nations represented, and particular attention will be paid to making attractive the temporary buildings on the Field, such as Timers' stands, press boxes, civilian tent hangars, first aid units, information booths, ticket booths, etc.

Odis Porter of Indianapolis, has been named official timer for the races, and has accepted. His chronometer, which has been used in the past, has been sent to the Naval Observatory at Washington for calibration required by the Federation Internationale Aeronautique.

Orville Wright Again Honored

Robert Bridges, poet laureate of England, Frederick Stock, director of the Chicago Symphony Orchestra and Orville Wright, pioneer inventor of the airplane, were among the twelve persons awarded the honorary degrees by the University of Michigan on June 16.

A BOOST FOR THE AMERICAN AIRWAY SYSTEM

High tribute was paid to the work of the Army Air Service in connection with the establishment of an airway system in this country by Mr. Holt Thomas in a paper which he recently read before the Institute of Transport, England, on the subject of "Air Transport and Its Uses."

Commenting on the activities of the Airways Section, Office of the Chief of Air Service, in distributing Aeronautical Bulletins giving exact descriptions of landing field facilities in different parts of this country, Mr. Thomas stated: "The Americans are not doing this for a joke; they are doing this because they believe a new form of transport, faster than anything hitherto known, is evolved; and yet it should be so obvious to us, the pioneers of air transport, that the value to the British Empire, with no direct railway service, must be ten times that of the value to the United States served in many cases with excellent railway lines."

Mr. Thomas has been connected with aviation since 1906, and started the London-Paris Air Service in 1919. In the following year he wrote a book on aerial transport. Mr. Thomas is endeavoring to awaken enthusiasm in the British public for airplane communication within the British Empire—a difficult task believed by many, due to the fact that the average Britisher thinks in such short distances. The people of New York or Boston think nothing of obtaining their fruits and vegetables from the vicinity of San Francisco, but it never occurs to anyone in London to attempt to obtain vegetables from Bagdad, although the distance is the same as that from San Francisco to Boston.

BARLING BOMBER TO FLY SOON

Resplendent in a brand new coat of shimmering silver the huge Barling Bomber will soon be wheeled from its special hangar at Wilbur Wright Field for its first flight of 1924.

For several months a crew of mechanics have been working on the big air monster, repairing the damage wrought by the elements while the big war plane stood in the weather through lack of adequate hangar space. Now a special hangar is provided to house the plane.



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NOTES CONCERNING ROUND-THE-WORLD FLIGHTS

American Expedition

WITH possibly the most hazardous portion of their long flight around the world completed, the three American planes, piloted by Lieutenants Lowell Smith, Erik Nelson and Leigh Wade, are at this writing making preparations for a fresh hop from Tourane, French Indo China to Saigon.

After their long trying journey across the northern Pacific and subsequent landing at Kasumigaura, Japan, on May 22, the flyers spent several days refitting the World Cruisers for their further grueling flights. Between times they were feted by the Japanese. Both new engines and floats were installed here before the next hop was attempted.

Acting Commander, Lieutenant Smith was held up a day or two in a little town on the coast of French Indo China. His engine was completely "washed out" but an American destroyer rushed a new motor to the disabled flyer and he was able to join his comrades again at Tourane. The itinerary of the flight proceeds eastward from Saigon as follows: Bangkok, Rangoon, Akyab, Calcutta, Allahabad, Delhi, Multan, Karacni, Chanbar, Bandarabbas, Bushire, Bagdad, Aleppo, Konia, San Stefan, Bucharest, Belgrade, Vienna, Strassbourg, Paris, London, thence to Hull.

From Hull the journey proceeds over the treacherous section of the northern Atlantic via Kirkwall, Thorshavn, Reykjayiki, Angmagsalik, thence to Ivigtut, which marks the taking off point on the lower point of Greenland to Indian Harbor. From this point the flyers will proceed down the Atlantic coast line, stopping at Hawke Bay, Pictou Harbor, Boston and New York. From New York the planes will fly westward via Washington and Dayton. It looks quite probable that the flyers will arrive in this country in good time to take a hand in the International Air Races scheduled for Dayton, October 2, 3 and 4. The Air Race officials are beginning to look hopeful toward this happy termination of the history-making expedition which bids fair to afford one of the principal drawing cards to the annual classic.

British Expedition

Major Maclaren, commanding the British Round-the-World expedition, appears to be in a discouraging predicament at Akyab, Burma where he met with a crash in the harbor on May 24, in attempting a take-off for the next hop to Rangoon. The Vickers Vulture plane was wrecked beyond repair, according to latest reports and the crew is now awaiting the delivery of a new ship which was placed in reserve in Japan. An American destroyer is delivering the plane to Major Maclaren, a bit of sportsmanship which is given high praise by English aeronautical magazines and newspapers. Major Maclaren expressed his personal appreciation of the service by sending a message of thanks to the American Naval attache at Tokyo.

French Expedition

The French flyer, Captain Peltier d'Oisy can thank the universal spread of the golf craze that he is without several broken bones today, for although his plane was washed out during his landing on the golf course at Shanghai, China, he escaped without injury. He landed at this point on May 20.

From all indications this mishap was first thought to mean a termination of the daring pilot's attempt to fly through from Paris to Tokyo. Up to this point his flight was heralded as spectacular and the entire world was drawn to the great stretches of country covered by the pilot in non-stop flights across Europe and Asia.

It was learned later that the Chinese Government had loaned Capt. d'Oisy another Breguet plane, which could be put in sufficiently good shape to attempt a continuation of the flight. The flyer was able to resume his journey in the Chinese plane on May 29, and succeeded in reaching Manchuria, after several stops for refueling.

Latest reports find d'Oisy being hailed with a great demonstration in Tokyo, which if anything, eclipsed the greeting accorded by the American flyers.

The supposition that Capt. d'Oisy would attempt to continue his flight around the world, following the course of the American flyers in the opposite direction is obviously out of the question now.

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Portuguese Expedition

Not to be outdone by their recent crash, which completely wrecked their plane, with which the two Portuguese flyers, Capt. Paes and Lieut. Beiros had hoped to make a flight from Lisbon to Macao, near Hongkong, China, a new plane was ordered and the airmen will carry on to their objective. They now are stationed at Rangoon, which city they reached on June 6, having caught up with the English flyers.

Major W. R. Blair, meteorological officer assigned to the American Round-the-World Flight, returned June 16, to McCook Field from the Aleutian Islands, where he was stationed to aid the U. S. flyers by checking the weather conditions. Major Blair will in the near future depart for Labrador in the same capacity and assist the flyers across the dangerous section of the northern Atlantic.

DAYTON'S INTEREST IN THE WORLD FLIGHT

Great interest is being manifested in the Round-the-World flight by the citizens of Dayton. Frequent reference to it is found in the window displays, and one of the most artistic of these is an exhibit in the window of the Dayton Camera Shop on West Third St. between Main and Ludlow Sts. A large globe furnished by the Rand McNally and Co. is ex-

hibited bearing on its surface a broad green line which follows the proposed route of the American aviators. The stations at which they will stop are all numbered. Four small planes with a wing spread of about 1½ inches are mounted at the place where the flyers are reported, the position being changed in accordance with the latest telegraphic reports. The route of the British flyers is shown by a broad white line and a miniature model of the British plane, like a small butterfly, is poised over the station from which last reported. Pictures of the Douglas air cruisers and of the pilots are also shown. There is also a big card showing tabulations of the mileage traveled by the American aviators. The slogan "Follow the Green Line" is prominently displayed. This interesting exhibit was prepared by the Johnson Airplane Co. of Dayton, in conjunction with *Slipstream*, which operates a commercial flying field at the edge of the city of Dayton and also operates a flying field at Buffalo, N. Y., which has been taken over from the Curtiss Co.—Air Service News Letter.

ENGLISH HELICOPTER PERFORMS

England is now tinkering with helicopters, the latest attention being centered on the direct lift machine, invented by Louis Brennan. The machine is being built for the Air Ministry and was given a try out on June 16.

Reports from Aldershot state that the helicopter hovered at a height of from 10 to 15 feet for several minutes. After the usual custom in helicopter experimenting, an atmosphere of strict secrecy was maintained and only a half dozen experts permitted to view the trials within the screened airdrome.

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The National Cash Register Company
Dayton, Ohio

Dark Horse Entered in Around the World Air Race

Major Pedro Zanni, well known Argentine aviator, has entered the International Air Race around the World, according to advices received by American representatives of Anthony H. G. Fokker, Dutch Aircraft manufacturer.

The route chosen by Major Zanni is being kept a close secret but work is being rushed on three Fokker planes in an effort to get the expedition under way within the next week or so.

The flight will be accomplished in three stages, the first being flown in a Fokker C IV machine with wheel undercarriage; the second is a similar plane equipped with pontoons and the third and last stage across the ocean will be flown with a seaplane especially designed by Fokker.

The planes which are powered with 450 H. P. Napier Lion engines will be shipped to the jumping off points of each stage.

Major Zanni is not dismayed by the start obtained by the U. S. and British teams. He expects that the much greater speed of the Fokkers will give him at least a sporting chance of overtaking his competitors before the long journey is safely completed.

Be Careful What You Say to "Mike"

It really happened. They were testing out a radio sending set at McCook Field, Dayton, Ohio. Lieut. Lowell Johnson was the pilot and Mr. Studebaker in the rear seat was sending a constant mellifluous vocal stream into the transmitter microphone. The stream is supposed to be constant, as the checker on the ground cannot interpret silence, there being no difference in the brand that comes when the set is out of order and the brand that is intentional. So, after the announcement "McCook Field Airplane, P-292," Mr. Studebaker had been valiantly reciting number series, words, phrases until his stock became exhausted, when he began to sing—"London Bridge is falling down, falling down, falling down."—Presently in the Radio Laboratory the telephone rang. A feminine voice was at the other end of the line. "This McCook Field?" it asked. And being assured affirmatively, went on: "I have a very strong radio set and I have just gotten in touch with one of your airplanes. There's a man in it who seems to be in distress—keeps calling out that he's falling down. And I thought you might want to send up another plane to help him."

The lady was thanked solemnly for her solicitude, but the story went the rounds of the Field like wild fire, and it was the last of solemnity in its connection. One really should be extremely careful in the use of the radio.

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Cincinnati Firm Turning Out Planes

Work on Grisard Field at Blue Ash, near Cincinnati is progressing rapidly under the able direction of Major Hoffman. A new coat of paint on the big hangar with the conspicuous letters "Cincinnati Airport," gives evidence that the Queen City is waking up to having an active hand in the affairs of aviation.

Hugh Watson has the concession rights for handling commercial flying on the field.

Purchasers of "Dixie" Ships, a commercial plane put out by Charles E. Lay, Commercial Aeronautical Engineer of Cincinnati, continue to come regularly. During the past week ships were sold to the following persons: Ted Donnelly, Cambridge, Ohio; A. C. Van Aelst, Goldendale, Washington; Melvin E. Culbertson, Topeka, Kansas; M. J. Moran, South Plainville, New Jersey; Meno Manley, Addison, New York; Elmer Nelson Highwood, Connecticut; K. Mattingly, Winter Park, Florida; and Ralph Miller, Pueblo, Colorado.

Pilot Leroy Davis of Dayton, Ohio, has secured the old field at Carroll Street Turkey Bottoms, and is doing passenger, advertising and exhibition flying. He is equipped with two rebuilt JN-4's. Two Dixies are being built for this field and will soon be placed in service.

Pilot J. H. Friend has secured a location on Reading Road and will open a field there for service with three converted three-place ships, about July 1.

Harry S. Heasel, Assistant Engineer of the C. E. Lay firm, will leave July 5, for an extended vacation, at which time he will visit several aircraft factories, gaining first hand information for future development at the Cincinnati plant.

More about the Bombing of Ice Jams

Touching on the work performed by the Army Air Service early in March last, in bombing ice jams in the Platte River, Nebraska, thereby averting a serious flood, Mr. W. M. Jeffers, General Manager of the Union Pacific Railroad, in a letter to Major Lawrence S. Churchill, Air Officer of the Seventh Corps Area, Omaha, Nebraska, has the following to say with reference to losses caused by the floods along the Platte River since 1912.

"In the year 1912 when the ice broke up in the river the line was quite badly washed in many places from Rogers, Nebraska, to Waterloo, Nebraska, and the cost of making repairs was approximately \$60,000.

In the year 1914, there were less extensive washouts between Fremont and Valley, caused by an ice gorge which formed near Mereer, Nebraska. The main line of the railroad was out of service for about five hours and the cost of repairs was approximately \$1,000.

The washouts this year, with which you are personally familiar, occurred between North Bend and Ames and were caused by an ice gorge near North Bend, Nebraska. In this case the main line was out of service for about twenty hours and the cost of repairs amounted to approximately \$15,000. In this instance there is no question but what the use of airplanes for dropping bombs was the means of dislodging this gorge and avoiding much more extensive damage. It is, of course, impossible to calculate what the damage might have been had we not had the advantage of the bombing facilities, but it is reasonable to assume that it might have run up into many thousands of dollars.

It cannot be questioned that in cases where ice gorges form in the rivers where they cannot be reached from land



Keep the earth always in sight

A black, ominous thundercloud. Murky streamers of rain. Jagged flashes of lightning. A huge threatening wall reaching up thousands of feet—extending miles on either side! When thus confronted, experience has taught the aviator always to keep the earth in sight.

It is then, as he twists this way and that, tossed and buffeted by the violence of the storm, that the accuracy of the aviator's map may be the measure of his safety. It is then that the suddenly arising emergency makes exact knowledge of the most trivial detail of the ground below a matter of vital importance.

Aviators trust RAND McNALLY Maps on all occasions because they find them invariably accurate. Mathematically exact, picturing faithfully the ground that unrolls below, constantly revised, RAND McNALLY Maps prove themselves to be first in the air as they are first on land and sea.

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with explosives, and it is usually impossible to do so in the larger streams, that the dropping of 300-pound bombs from airplanes is the solution of the problem of avoiding, or at least minimizing the damage from ice gorges. We must all keep in mind, however, that the bombing operations on the Platte River this last spring were a new departure and the experience gained therefrom by the railroad management as well as the Air Service will be invaluable in cases of future operations on the Platte River or any other stream where trouble of this kind might become imminent.

I am particularly desirous of reassuring the Chief of Air Service of my appreciation of the effective activities of the Air Service in preparing for and producing results in the emergency of last spring."

The Birth of a New Industry

The editor of Slipstream paid an informal call a few days ago to the plant of the Advance Aircraft Company of Troy, Ohio, and the Hartzell Propeller Works of Piqua, Ohio. The former firm, it will be remembered are the builders of the popular "Waco", commercial and passenger carrying ships, while the Hartzell firm under the able management of Fred Cheravay occupies a prominent place in the rising aeronautical industry of the United States. It was the congenial Mr. Cheravay, we remember, who designed the Hartzell FC-1 which ship, pilot Walter Lees drove through to such a spectacular victory in the Flying Club of St. Louis Race at the International Air Races last year. The plane was entered by the Johnson Airplane & Supply Company of Dayton, Ohio.

It was indeed a revelation to note the activity in both of the plants mentioned. The Advance Aircraft concern is going full blast with orders swamping the present facilities of the factory.

The Hartzell Propeller Works have a fine outlay of orders, which are for the greater part from commercial aircraft manufacturers. We note two extra large "props" nearing completion which will be used on the new Remington-Burnelli Model No. 2 passenger plane now under construction in New York. There was also a big order going through for Chance Vought, and Johnson Flying Service, Inc., of Dayton and Buffalo.

In order to fully appreciate the situation in these factories one must forget that the war is over and that the work now being done represents a normal peace time demand. The more we think of the matter the more optimistic we become in visualizing the ultimate expansion of the aircraft industry.

* * * * *

We were glad to note, too, that Mr. Cheravay intends to design and build a plane to compete in the International Air Races at Dayton this fall. The ship will be after the same type as the entry of 1923 with the installation of new wings and possibly a new motor.

It is generally the case that all credit goes to the pilot in the race events but it is felt that not enough can be said of the fellow who can both design and build a winner after the type of the Hartzell FC-1.

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We then varnished a set of Ailerons, with _____; Stabilizer and Elevators with _____; Wings, Fin and Rudder, with Valspar, and assembled them on a ship. This ship, together with a completely Valsparred one, made a trip from Post Field to McCook Field, Dayton, Ohio, in the early spring of 1922, encountering much bad weather, rain, hail and snow. Though the storms were so bad the Propellers had to be changed twice--more than an inch of the leading edges being cut away by hail and rain--the Valsparred surfaces came through without a blemish. The Varnish on the upper, or exposed, surfaces of the parts which had been covered with _____ and _____, had completely cracked off, were water logged, and had to be discarded.

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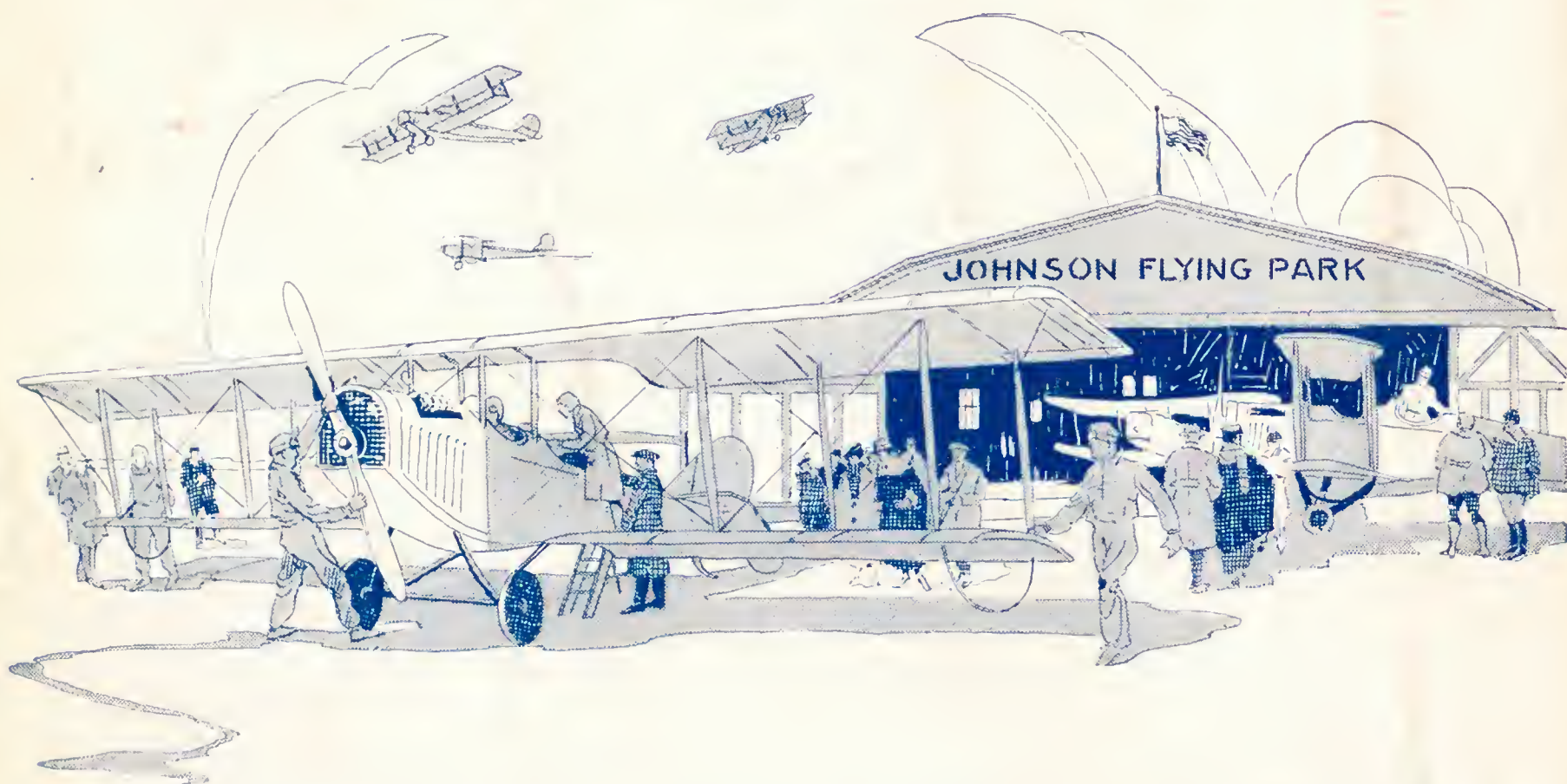
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NEWS of the AERIAL WORLD

THE

SLIPSTREAM

AUGUST

Vol. 5, No. 7

MONTHLY

PUBLISHED IN DAYTON OHIO

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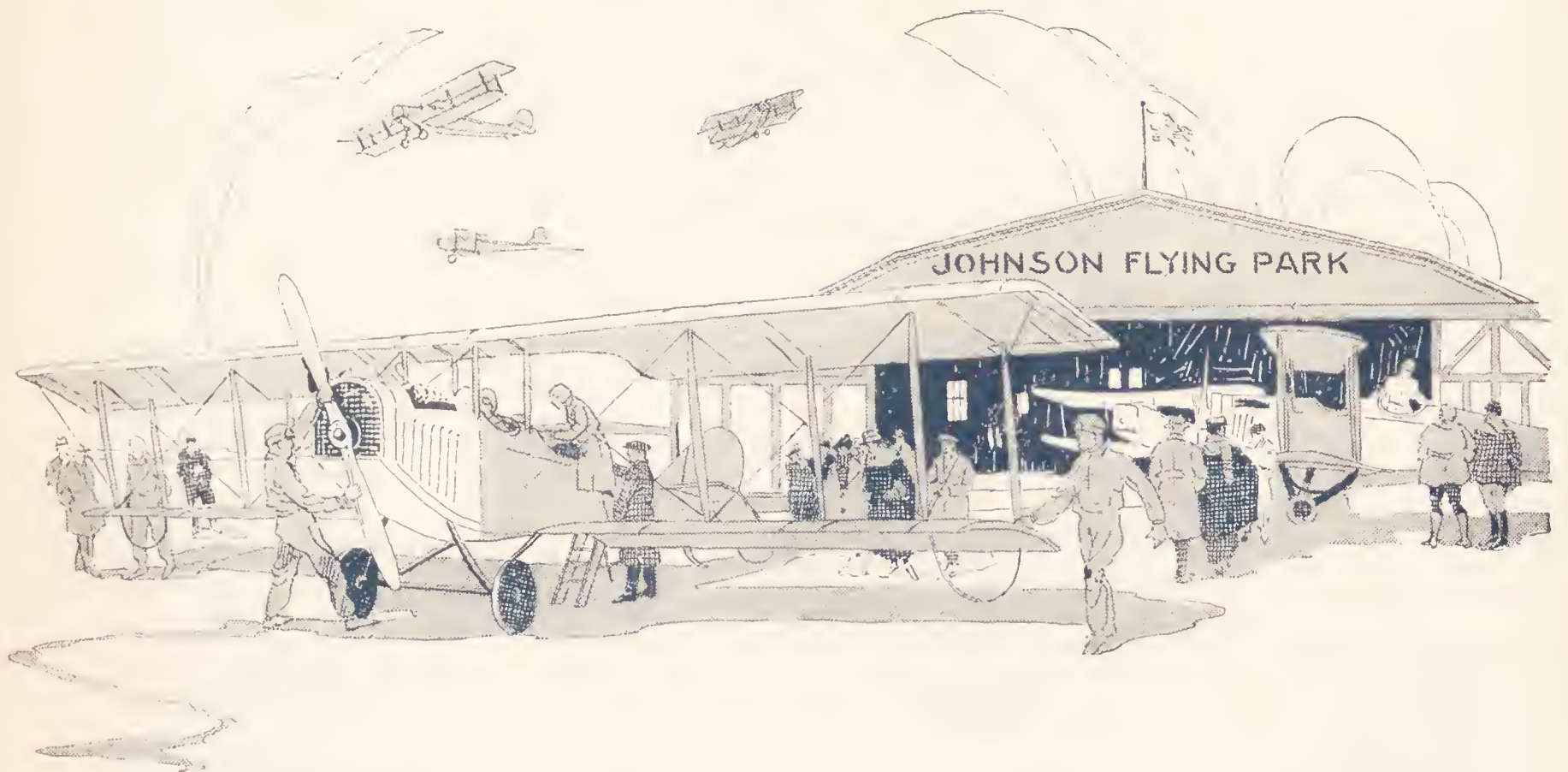


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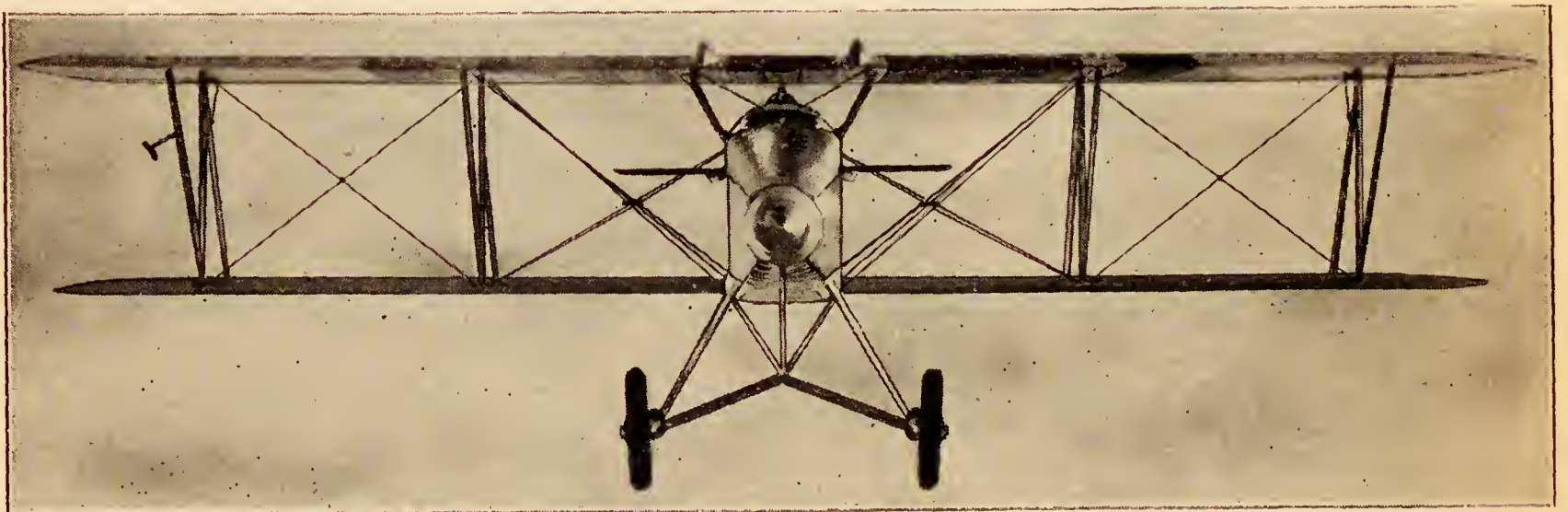
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VOL. 5 AUGUST No. 7

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FRED F. MARSHALL..... Editor and Business Manager

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TO THE NEST AT DUSK.

Courtesy Dayton Daily News

Eddie Stinson Battles Tornado With Five Passengers

Thrilling Tale Told by Exhausted Pilot After His Flight Through Storm in Plane

By W. A. MARA

NEWSPAPER accounts of the terrific tornado which swept Lorain and other portions of Northern Ohio on Saturday evening, June 28, leaving ruin and death in its wake, made no mention of the lone airman whose airplane was caught in the vortex.

The tornado struck without warning; in an instant scores of lives were snuffed out and the city of Lorain was laid in ruins. Huge lake freighters were torn from their berths and tossed like chips on the seething waters of Lake Erie as the winds screamed their paeans of destruction. Yet while all was chaos, and the storm was at its height, a Detroit man in an all-metal monoplane carrying with him five passengers, fought a single-handed duel with the tornado and emerged victorious.

The airman was Edward Stinson, president of the Stinson Sales Corp., 439 W. Congress St., and the story of his fight, as related to the writer, is one of the epics of aerial navigation. Never before, to our knowledge, has an airplane battled and conquered a cyclone; never before has man given such conclusive proof of his mastery of the air.

It seems particularly fitting that Stinson should have been singled out by fate to undergo this experience. He is the dean of all flyers. Since 1911 he has piloted airplanes and his record shows that he has spent more hours in the air than any man living. When the lives of the five passengers in his "ship" hung by a thread it was indeed fortunate that the greatest flyer in the world held the "stick." But let me tell you the story as Stinson related it to me.

"We left New York Saturday morning bound for Detroit, and after four hours of flying landed in Buffalo to replenish our supplies of oil and gasoline. On the trip from New York to Buffalo we bucked strong head winds and the air was rough and bumpy, but I thought nothing of this as these conditions are often encountered, and head winds only tend to decrease the speed of the ship.

"We spent about an hour in Buffalo, as we were in no particular hurry, and it was nearly 3 o'clock in the afternoon when we took off for Detroit. Outside of Buffalo weather conditions were extremely bad. It ordinarily takes me only two hours to fly from Buffalo to Detroit, but the head winds increased in violence and it required three hours to travel from Buffalo to the point where we came in violent contact with the tornado.

"We were flying over Lake Erie, about ten miles from the Canadian shore, when things began to go wrong. Kemp was flying the ship at the time and I was rest-



Happiness was written all over Eddie Stinson's face when he arrived in Detroit after one of the most thrilling battles an aviator ever had with the elements. Here he is just stepping out of his plane at Packard Field. His countenance, beaten by wind and rain in that memorable flight, doesn't begin to show the joy he felt.

ing. The clouds were hanging low and we had descended to an altitude of 2,200 feet in order to keep below the clouds.

"The tornado struck us without warning. There was a sudden bump which I took to mean a rather large air pocket. I thought nothing of this until I looked at the altimeter a second later and discovered that it showed an altitude of 7,500 feet. I knew that only a moment before we had been flying at 2,200 feet and my first thought was that the altimeter had gone 'haywire.' Then I looked at the compass. The needle was gyrating wildly. It spun from north to south and from east to west and refused to remain in its normal position.

"I thought for a moment that I was dreaming. I had never known the instruments to behave so strangely before. They indicated that we had been blown up a mile in less than two minutes. And then the true situation began to dawn on me. I had been caught several times before in the dreaded Texas northers and had noted the same condition in a much slighter degree. I could hear the roar of the wind above the explosions of the motor and I observed that the action of the waves on the lake below indicated that the wind was sweeping toward the American shore.

"It was up to us to get out of the storm area as quickly as possible. We were being whirled aloft at a terrific rate of speed while the wind was, at the same time, carrying us well out over the lake. I determined to make a landing, if possible, on the Canadian shore, because my ship, which is an all-metal monoplane, is not designed to land on the water. An engine failure over



"The Clouds Were Rolling and Tossing in an Almost Unbelievable Manner——"

the middle of Lake Erie, in the teeth of a tornado, was something I wished to avoid at all costs. It would have meant almost certain death.

"I determined to dive, so I killed the motor and motioned to Kemp to put the plane into a dive. Imagine my surprise when I found that even with the motor cut off and with the ship pointed downward our altimeter still showed that we were being blown aloft. In fact, we were actually blown upward an additional 1,500 feet. This was more than I could understand. Instead of improving, our situation was growing worse. We were being driven further over the lake each second. Something had to be done. Already we were above the clouds and it was impossible to gain any accurate idea of our whereabouts. The clouds were rolling and tossing in an almost unbelievable manner. I knew that we must make a landing as soon as possible and at the same time try to skirt the fringes of the cyclone.

"I motioned Kemp to give me the controls. I grasped the stick and pointed the plane down in the steepest dive possible. Looking at the instruments I saw that we were gaining; the altimeter showed that we were descending, but slowly, in spite of the fact that we were pointing almost directly toward the lake. Finally we dropped below the clouds, and then began a search for a suitable landing field. The lake was seething below us. Far to the right was the Canadian shore and I headed the ship towards it. It was necessary to drive almost directly into the teeth of the tornado, but we were glad to see that we were gaining slightly.

"Finally I saw a field that seemed suitable and we dove for it. Ordinarily my plane requires a quarter of a mile run along the ground before coming to a stop after landing, but not so on this occasion. We cleared

a fence and lighted gently on the ground, but the force of the wind was so great that we had run along scarcely 20 feet before the plane came to a stop.

"The rain was falling in torrents and Kemp and I were drenched to the skin. We taxied along the ground until the plane was sheltered somewhat by a large barn. There was nothing for us to do but wait for better weather.

"When the wind died down somewhat we climbed into the ship again and attempted to take off. The first effort met with failure; so did the second and third attempts. This was for the reason that the field was covered with water and the big wheels sank into the soft ground throwing great sheets of water to either side as we plowed along. After the third failure it became necessary for two of the five passengers to remain on the ground. They succeeded in hiring an automobile and proceeded to Detroit. With the load thus lightened we managed to get off on the fourth attempt and our flight to Detroit from that point on was uneventful."

So much for Stinson's story. Like all men who accomplish great things, his modest telling of the tale leaves much to the imagination, but his airplane bears mute testimony to the heroic struggle. The propeller, metal tipped, is bitten and scarred by the driving rain. Apart from the pock-marked propeller the rest of the metal ship is in just as good condition as when it came from the factory.

And "Eddie" Stinson, the dean of all flyers, has proven again, in a spectacular manner, that a good airplane, piloted by an experienced operator, offers the safest method of transportation.

BOOST THE LORAIN RELIEF FUND

A liberal portion of our DAILY FLYING RECEIPTS are being turned over to the aid of the stricken tornado sufferers at LORAIN, OHIO. All flying prices reduced.

JOHNSON FLYING SERVICE, Inc., Dayton, O. — Buffalo, N. Y.

Ford Furnishing Commercial Landing Field

Stout Metal Airplane Co. and Aircraft Development Corp. Will Use New Field Near Dearborn—Ideal Airport is Aim of Ford

By STANLEY KNAUSS

A COMMERCIAL landing field for Detroit's commercial aviation activities is being built and furnished at Dearborn by Henry and Edsel Ford as an incentive to those working on metal airplane and airship construction in Detroit.

The field which is almost three-quarters of a mile square, is located at Dearborn on Oakwood Boulevard, just adjoining the new Ford Administration Building, and on it is being built, as well, a factory for the Stout Metal Airplane Company of Detroit, builders of the Air Pullman, *Maiden Detroit*, which has been flying in passenger work about this city for the past two months; and the Aircraft Development Corporation, another Detroit firm, working on all-metal dirigibles of a super-Zeppelin type.

This field has been furnished for these two companies as a civic development, and as a national patriotic move, "there being no intention on the part of the Ford Motor Company, to go into the airplane business, other than to watch its development," was the announcement given out this morning by Edsel Ford. "We have followed the aviation development work that has been carried on by both the Stout Airplane and Upson Airship groups for some time and believe that the results which they are obtaining justify every encouragement that Detroit can give toward making this the center of metal aircraft production."

It is planned to make this an ideal airport. It has the advantage of being only twenty-five minutes from the post office by motor car, which will have a distinct bearing on airmail activities coming into and going out of Detroit. It is near the Michigan Central Railroad, close to proposed street-car and bus lines, and an ideal location for commercial flying in and out of Detroit.

This is not meant to take the place of the establishment of a municipal landing field, but to be a strictly commercial development and the operating basis of airlines for aviation companies coming into and out of Detroit.

Twenty-five tractors are now at work in the area, levelling it off and preparing it for actual flying work within the next thirty days, while contracts have been signed for the new factory buildings which will house the Aircraft Development and Stout Metal Airplane groups; and also the operating companies later to be formed will center their activities at this field.

Mr. Ralph Upson, who is at the head of the Aircraft Development Company's airship work, was most enthusiastic about the new field and its possibilities. "In all our experimental work to date, here in Detroit, and even in our previous activities, we have been handi-

capped by lack of space and facilities for the proper handling of new problems, but I believe with this airport once established, our work will progress on a far more definite basis than would be possible otherwise, and will enable us to carry on in Detroit, work which otherwise would be done in other cities where larger landing space is available and climatic conditions more ideal."

Possibly more immediately effected is the work of the Stout Metal Airplane Company with its flying activities actually started.

"A more patriotic thing could not have been done, toward bringing aviation not only to Detroit as a manufacturing center, but to America as a means of peaceful national defense," was Col. Sidney D. Waldon's comment regarding the new field.

Aviation cannot come to Detroit itself, but will only become an industry through the action and interest of those men in Detroit who are willing to spend both their time and money in making Detroit the aircraft center.

The work of a few of the pioneers has already started up in this city with more direct commercial and financial interest in the business of flying than has been accomplished in any other city in America, and in any other center not excluding Dayton, Ohio, and Washington, D. C.

Flying has become a basis of conversation but differing from other air centers, Detroit's talk is all of commercial flying, and little reference to military flying. Air activities here are not working toward government contracts or sustenance from Washington, but on the actual earning capacity of freight and passenger aircraft over definite airlines.

Working from this viewpoint, Detroit already has several years advantage over other cities.

Other Detroiters who expressed their appreciation of the establishment of the Ford field at Dearborn are:

W. O. Briggs	Fred Fisher	Alex Dow
A. T. Waterfall	H. H. Emmons	C. S. Mott

Quoting Harold Emmons, president of the Board of Commerce, "I believe this is the greatest single establishment that could be made toward bringing the aircraft industry to Detroit, and is of much greater value because it is a commercial move, rather than municipal. The greatest credit is due to those who have made the establishment of this field possible."

Carl B. Fritche, general manager of the Aircraft Development Company says, "The establishment of this field through the patriotic foresight of Mr. Ford means that a sprouting industry in this city now has the ground to grow in. With good ground and the proper care, the

buds will soon bloom and Detroit will garner a new kind of crop for a new market."

The Stout Directorate includes: Edsel B. Ford, Sidney D. Waldon, Chas. B. Bohn, W. O. Briggs, Chas. T. Bush, H. H. Emmons, Wm. B. Mayo, Fred Fisher, Harry R. Graham, Geo. M. Holley, C. F. Kettering, R. A. Stranahan, Fred W. Warner, Arthur T. Waterfall, and Wm. B. Stout.

Mr. R. A. Stranahan is president of the Stout Company and Wm. B. Stout is general manager.

Offices of both companies are located in the General Motors Building.

Visiting Newspaper Men Enjoy Flight Over New York

Visiting newspaper men covering the Democratic National Convention, who saw New York mainly through the haze in crowded Madison Square Garden, viewed the city from a new vantage point recently up in the clouds.

As guests of the Newspaper Club of New York, thirty-five of the out-of-town journalists were taken for flights over New York City in three planes from the Curtiss Flying Field at Garden City, L. I. Each flight lasted twenty minutes.

The aerial jaunts were under the direction of H. A. Bruno, chairman of the Aviation Committee of the Newspaper Club of New York. C. S. Jones, manager of the Curtiss Field piloted one of the planes and the other two were in charge of Captain R. H. Depew, chief of the Fairchild Aerial Camera Corporation's Flying Division, and E. P. Lott, also a pilot for the Fairchild concern.

The out-of-town visitors were particularly interested in the new Fairchild Huff-Daland camera plane, which is the first machine to be built especially for aerial photographic work. The ladies especially preferred to go up in this machine, perhaps because of its superior speed. Sir William Malabar, who represented The Manchester Guardian in England at the convention and who flew a great deal during the war and who has travelled across Europe several times by air, was also very much interested in this plane.

The third annual convention of the National Aeronautic Association will be held at Dayton, Ohio, October 2, 3, and 4, at the time of the International Air Races. Sessions will be held in the ball room of the Miami Hotel, Dayton's largest hostelry.

Due to the increased membership and the new chapters that have been organized, it will be the biggest convention in the history of the Association. Many subjects of major importance to American aeronautics will be considered.

At the national convention, the president, vice-president, secretary, treasurer, and governors of the Association are to be elected. The convention, which serves as the

legislative body of the Association, also has power to amend the By-Laws.

The program of the convention is now being planned, and will be announced in a later issue. The meeting of the Executive Committee to be held in Dayton, July 1, will have an important bearing upon this.

Under the By-Laws of the Association each chapter is entitled to one delegate and one alternate and one additional delegate and alternate for each twenty-five members or major portion thereof. This representation is based upon the total number of life, sustaining, and regular members according to the records of the treasurer of the Association sixty days prior to the convention.

In a number of cities chapters are now in process of organization.

Leaders in these communities are reminded that in order to be represented at the convention, their chapters must be completed in one month.

In addition to the chapter delegates, each state is entitled to one delegate and one alternate in the convention and one additional delegate and one additional alternate for each twenty-five members or major portion thereof not included in chapters.

Arrangements for the convention are being made by a committee of Dayton Chapter members consisting of Dr. D. F. Garland, John F. Ahlers, E. J. Barney, J. G. Collison, L. Luzern Custer, J. M. Johnson, and Howard S. Smith.

Lieut. Stevens to Photo Amazon

A new expedition into the unexplored regions of the Amazon River under the command of Dr. Alexander Hamilton Rice is preparing to get under way from Manaus, Brazil. Lieut. A. W. Stevens, famous aerial photographer, sailed from New York recently to join Doctor Rice and his associates. The expedition, which is to go 3,000 miles up the Amazon, will be equipped with the new Fairchild six-mile camera, of the same type with which Captain Stevens took the first high altitude photos of Dayton. It will be remembered that these photos were taken from a height of six miles and showed the entire city of Dayton, nineteen square miles, on one plate. (See July issue Slipstream.)

Doctor Rice will use a large steel boat for his operating base and two flying boats for his aerial survey work. On his seven previous expeditions he has depended on ground surveys and has spent the last twenty years of his life exploring about 500,000 square miles in the upper part of Brazil.

Commercial Aviation in Argentina

The statistics of the Buenos Aires-Montevideo Air Service for January and February, 1924, show the following figures: Trips, 126; passengers transported, 425; crew, 160; sacks of mail carried, 200. By executive order 364 hectares (899.44 acres) near Magdalena, Buenos Aires Province, have been cleared for a naval air base on the River Plate.

The U. S. AIR MAIL

By An Air Mail Pilot

When I was a youngster, like most other boys, I read Jules Verne's tales of his make-believe submarine and his imaginary trip to the moon. Like others of his readers I permitted myself to be carried away by his vivid descriptions. I well remember how keen was my regret when, in his *Trip to the Moon*, a slight miscalculation resulted in disaster to his hero, who by that time had become to me a very real person indeed.

Also, I recall as though it were but yesterday how feverishly I turned the pages of *Twenty Thousand Leagues Under the Sea* until I had followed Captain Nemo to safety out of his ice-jam under the waters of the Antarctic—wonderful tales—interesting beyond compare—prophetic to a degree only capable of appreciation during the past decade.

As I read those stirring books of fiction, little did I dream that it was to be my privilege to take an active part in an adventure which may in truth be said to "out-Verne" Verne. For as a matter of fact, the detailed history of the activities of the Air Mail Service during the past year makes a tale vastly more interesting, vastly more stirring, than even the imaginative Jules Verne at his best was able to pen.

On July 1, the Department established upon regular schedule a permanent day and night air service between New York and San Francisco.

For four days last August the Post Office Department operated its Air Mail Service from San Francisco to New York, in a daily continuous movement in each direction. To make this possible it was necessary to light the Postal Air Way from Chicago to Cheyenne, approximately 1,000 miles. This lighting followed no precedents. Unless I am mistaken, it is the first lighted air way in the world, with a small 5,000 candle power acetylene flashing light every three miles—over 300 of them—with thirty-four electric searchlight type of lamps, of 7,000,000 candle power each, revolving on the top of wind-mill towers at intervals of approximately twenty-five miles, and with 5 huge half-billion (500 million) candle-power revolving lights, located on high towers at Chicago, Iowa City, Omaha, North Platte, and Cheyenne, approximately 250 miles apart.

Heretofore, the air activities of the postal service had been confined to daytime operations.

The preparation of this ribbon of light almost one-third of the way across our great continent had taken sixteen months and had cost several hundred thousand dollars. The aviation world had watched our preparations with much interest, and, I fear, with no small degree of doubt.

We have without doubt proven conclusively that the



WIDE WORLD PHOTO

THE FIRST LETTER BOXES IN GERMANY ONLY FOR AIR-MAIL

In Munich and Nurnberg for the first time in Germany letter boxes for the air-mail only are to be seen.

navigation of airplane at night is practicable. We have proven our ability to bring mail across this country of ours in approximately one day. We have cut almost seventy hours off the postal time between New York and San Francisco.

I presume that you have heard much of aviation and the military necessity for its development. This is quite true. But none of us in time of peace is inclined to think much of preparation for war. What we are more interested in are ways and means in which to increase the comfort and efficiency of our lives.

For a moment, transport yourselves mentally back through the generations to the days of the stagecoach, the pony express, the covered wagon. You, who have all your lifetime been accustomed to the quickest means of communication, may have some difficulty in realizing what it meant to the pioneers to wait weeks, even months, for letters, to travel distances which, by means of our modern train service, are now transported in days. What would happen to your business and home life were communication suddenly lengthened so that it required, as it once did—three weeks to get a letter to New York, and three months to get one to San Francisco from a mid-west city?

Gradually our transportation map has shrunk. Surface transportation has attained a degree of splendid efficiency, but there is a speed beyond which express trains and fast steamers cannot with safety pass. And at this point we turn to the air. The air is an ocean—an ocean of atmosphere—in which we are only beginning to navi-

gate. It is a strange ocean, and our ships each time they fly, shatter the cherished theories of natural law and challenge even time and space. We are pioneers, and like other pioneers, we can go only step at a time.

It has been a source of deep gratification to learn that the members of the Cabinet, and other departmental heads of our government, share with the Postmaster General the desire to see America lead all nations of the world in the practical utilization of aircraft for our commercial prosperity and social good. The Post Office Department is doing something unique in aviation. It is presenting aircraft as vehicles of service, not merely instruments of destruction. The air mail is introduced not as a petitioner for support, but as a new channel which you may patronize if you desire extra good speed. And we all know, that in modern business, to save time is to save money.

From July 1, seven days a week, we cross the continent in an average of thirty-three hours elapsed time. By fastest train, this now requires from ninety-six to one hundred and twenty hours. We have so co-ordinated the air schedules with the railway mail service that it is practicable for users of the mails in far distant points to take advantage of the acceleration which the airplane will give, on even one unit of the letter's journey.

An Air Mail Extension Committee to foster the use of Air Mail among Detroit business men, has been formed in that city.

The purpose actuating the formation of the committee will be to promptly inform all business men and the larger users of mail of the far-reaching effects and great advantages which will be secured to them through the utilization of the Air Mail Service.

The announcement of the permanent coast-to-coast Air Mail Service on a 32-hour schedule, followed by the successful dawn-to-dusk flight of Lieut. Maughan, has greatly impressed the public, particularly the business men, with the fact that through the progressive, forward-looking action of the Post Office Department and the authority of Congress, the initial step toward a very radical and important improvement in the dispatch and handling of business, is about to be realized.

Among the Detroit men interested in the organization of this committee are: Edsel B. Ford, president of the Ford Motor Co.; Charles T. Bush, vice-president of the C. A. Strelinger Co.; Harold H. Emmons, president of the Detroit Board of Commerce; Roy D. Chapin, chairman of the board, Hudson Motor Car Co.; William E. Metzger, vice-president of the Columbia Motors Co.; Alvan Macauley, president of the Packard Motor Co.; Howard E. Coffin, vice-president of the Hudson Motor Car Co., and Herbert H. Rice, president of the Cadillac Motor Car Co.

Ford Liberty Motor Travels "Some" Distance

Recently workmen at the Rockwell Air Intermediate Depot, Coronado, California, were surprised when opening a crate containing DeHaviland 4A No. 31084, built by the Dayton-Wright Company, to find installed therein Ford Liberty 12A No. 29494, Ford No. 1. This engine

was the first Liberty the Ford people turned out and was completed July 18, 1918. Major H. H. Arnold, commanding officer of the Rockwell Air Intermediate Depot, witnessed the final test of this engine early in '18 and received it at this depot after it had traveled from Detroit to France, arriving there too late to take part in bringing down the Huns. From France it was reshipped to the United States and then shipped to the Philippines. From the Islands it was reshipped to Rockwell Field and has remained in storage since its arrival. As far as can be determined, this engine has never had any time in the air. Its entire time since coming off the test block at Detroit has been in crates, although it has traveled a distance equal to the circumference of the globe.

Commercial Aviation stock has reason to take a decided jump in this country with the news that the Ford Motor Company has swung over to the cause with material assistance.

Recently Edsel Ford, president of the Ford firm, turned over to the city of Detroit a fine new flying field near which it will erect a factory for turning out both airplanes and airships.

It seems that a great influence has been created in automotive circles through the demonstrations of the new Stout all-metal Air Pullman recently completed by the Stout Metal Airplane Company, and the elaborate plans laid out by the Aircraft Development Company headed by Ralph Upson, for building "super-Zeppelins" for commercial use. The Ford Motor Company is cooperating directly with these two concerns in furnishing the flying field and factory.

The two newly organized concerns for manufacturing aircraft incorporate as directors and subscribers scores of the biggest men in the industrial life of the U. S. which makes one feel that after all America is not asleep to the possibilities of air navigation and is preparing a solid foundation for future development of this business within the very near future.

Detroit in its far-seeing manner is therefore quietly getting in on the ground floor—and incidentally, if there is to be such a thing as aerial "flivvers," it is quite natural to assume that Ford should want a prominent hand in their manufacture.

A False Report Corrected

In connection with the recent record breaking flight of a Navy seaplane at Anacostia Air Station, Washington, D. C., which was powered with a Wright 600 horsepower engine, F. B. Rentschler, president of the Wright Aeronautical Corporation, makers of the engine, denied recent published reports to the effect that the plane was finally forced down on account of engine trouble.

"The Navy Department's investigation of the cause of the descent of this plane revealed that the flow of fuel to the engine was stopped," Mr. Rentschler said. "This was probably due to the failure of a fan driven pump on the wing of the plane which is used to force gasoline from an auxiliary tank. This is an accessory and not a part of the engine. It has nothing to do with the engine except to help supply it with gasoline when the main tank is empty. The Navy investigation also revealed that the engine was in perfect condition and could have remained in the air as long as the gas supply lasted."

THE INTERNATIONAL AIR RACES

DAYTON, OHIO, OCT. 2, 3 and 4

By MAX KOHNOP



C. H. PAUL
Manager, International Air Races



HUGH W. ROBERTSON
Ass't Mgr., International Air Races

THE most accurately measured flying course, for use during the staging of the International Air Races at Wright Field, will be laid out at the reservation within the next few weeks, when officers complete their work of measuring the course by the night triangulation process.

This work, which at present is practically two-thirds completed, is done entirely at night with the aid of planes and powerful searchlights.

Use of the triangulation process by daylight for highly accurate work has been very successful in the past, but to carry on such operations at night is a new venture, and to date a highly successful one.

Officers of the aerial mapping section at McCook Field, under Lieut. Edward Plank are carrying out this work. Instead of erecting land towers for this triangulation work, which would have necessitated a large expenditure, the use of powerful searchlights was decided upon. This of course necessitated that the work be done at night.

For the purpose of obtaining an accurate base line from which to start the triangulation system, Lieut. Plank, first had a line on the ground, nine miles in length, measured by regulation method and checked three times.

When this had been obtained it was a comparatively simple matter to secure the angles to the various points on the course, plat the triangulation system and compute the distances.

The officers are making separate measurements for the 50 kilometer; 15 mile and 5 mile courses, which will be used for the respective races during the meet. Work of measuring and laying out such courses, will be completed, it is believed, within the next few weeks.

The work originally was started by Maj. James Bagley, of McCook Field, but was taken over by Lieut. Plank, following the transfer of the former officer to Fort Humphrey on July 5.

Max Kohnop, for several years connected with the editorial department of the Dayton Daily News, on July 1, assumed his duties as publicity director for the air races. The work of disseminating advance information relative to plans and the program for the races to approximately 550 daily and weekly newspapers throughout the central states and in other cities throughout the country as well as handling all other such matters of publicity will come under his supervision.

No less than three and probably four planes will be entered in commercial plane events in the International Air Races, in Dayton this October by the Swallow Airplane Co., air race officials have been notified.

The firm is particularly interested in the Liberty Engine builder's race, and the event for commercial planes having carrying capacity of 2, 3 and 4 passengers.

Plans are now under way toward making the air carnival, which will be held in connection with the air races, one of the most thrilling and entertaining ever staged. Due to the fact that this carnival, which ordinarily is staged at McCook Field on Labor Day, this year is being combined with the race program, the committees arranging for the event are doubling their efforts.

Arrangements have been made by Maj. Carl Spatz, commandant at Selfridge Field, Mich., whereby twelve flyers from that field will pilot as many fast planes of the Thomas-Morse and Curtiss pursuit types in this carnival.

All of these planes at some time or other were entered in Pulitzer trophy events but none came within the winning group.

The growing interest in the various light plane events on the race program is shown by the many inquiries being made

of air race officials for data on entries and regulations governing such events.

Maj. Gen. Mason M. Patrick, chief of the air service has approved the detail to duty here during the races of Capt. L. L. Snow, liaison officer for such service. He is expected to confer with air race officials relative to his duties here, within the near future.

Among the interested spectators at the races this fall will be Edsen Fessenden Gallaudet, prominent airplane designer and builder, of East Greenwich, R. I., who has asked that reservations be made for him.

Mr. Gallaudet, a former Dayton man, gained considerable prominence in the aeronautical world some years ago, when he organized and headed the Gallaudet Aircraft Co., of East Greenwich. He also designed and built a number of army bombing planes which were approved and tested at McCook Field, Dayton.

Preliminary arrangements for the annual banquet of the National Aeronautic Association, to be held in connection with the staging of the air races, were discussed by the banquet committee, at a meeting on July 15, in the conference room of the Chamber of Commerce.

On July 16, the committee arranging for the smoker to be held on one of the nights of the race meet, convened in the Chamber of Commerce rooms to discuss plans for this affair.

Work of improving the different roads leading to Wright Field is now well under way. With the completion of this detail, motorists who will attend the races will be assured of excellent highways into Dayton and to the field proper.

Because of the limited space afforded on the roof of the hangars it has been decided to erect the press stand for Dayton and visiting newspapermen adjacent to the judges' and timers' stand. This will permit of greater convenience for the reporters as well as being more centrally located between the military and civilian camps, where participating flyers will be stationed before and after taking off.

An international aspect to the On-to-Dayton race, the initial event on the program for the International Air Races, this October will be afforded, through the virtual promise of an entry in this event, by C. S. Caldwell, an official of the Laurentide Air Service, Ltd., of Angliers, Quebec, Canada.

While it is expected that quite a number of Canadian flyers, both civilian and military, will in all probability enter the different events scheduled for the races, this is the first instance in which any flyer from a foreign nation signified his intention of entering this initial event, which promises to be one of the most interesting races on the program.

The Laurentide Air Service Company is one of the largest and most active organizations in the Dominion. Within the past two years it has done considerable research and practical test work on a large scale in forest fire protection. The company also did some work in forest ranging, survey and other such detail for the Quebec government. Many aerial maps of forest sections were made for lumbering purposes.

Canada probably will be officially represented in the Air service, at least, at the races by Dominion Air Squadron leader, W. Hume, of Canada. While he has not definitely promised that he will attend, he has assured air race officials that he will come to Dayton, if his duties so permit him.

R. J. Bassett, chief pilot for the Chicago Aviation Company, of that city, has expressed interest in the On-to-Dayton race, which he probably will enter as well as one or more events. The firm conducts a large flying school in Chicago and also does considerable commercial flying as well as engaging in aerial photography.

The Dayton Section of the Society of Automotive Engineers has offered the services of its officers and members in any work on the field during the air races. It is probable that these members, because of their engineering experience will be assigned to tasks in checking planes on arrival and during the different racing and exhibition events, as well as aiding timers and judges generally.

The Society of Automotive Engineers, Dayton section, is boosting the Wright Brothers medal award, which is to be given at the end of this year to the individual contributing the most meritorious development in aeronautical science during the year. This prize will be awarded for contributions designed to stimulate increased non-military use of heavier-than-air craft.

Probably one of the first entrants in the Free-For-All race, sponsored by the Central Labor Union, of Dayton, may result from a communication received from Joseph C. Dissettee, president and treasurer of the Indianapolis Wire Bound Box Company of that city, seeking data on a race of this kind, which he plans to enter personally.

One or more planes may be entered in a number of races by the Huff-Daland Aero Corporation, of Ogdensburg, N. Y., according to information received by race officials from G. P. Post, an official of the concern. The firm designs and builds airplanes and flying boats.

The On-to-Dayton and the light airplane races appeal especially to civilian flyers throughout the country, as is evidenced by the large number of requests for information regarding them, received during the past week.

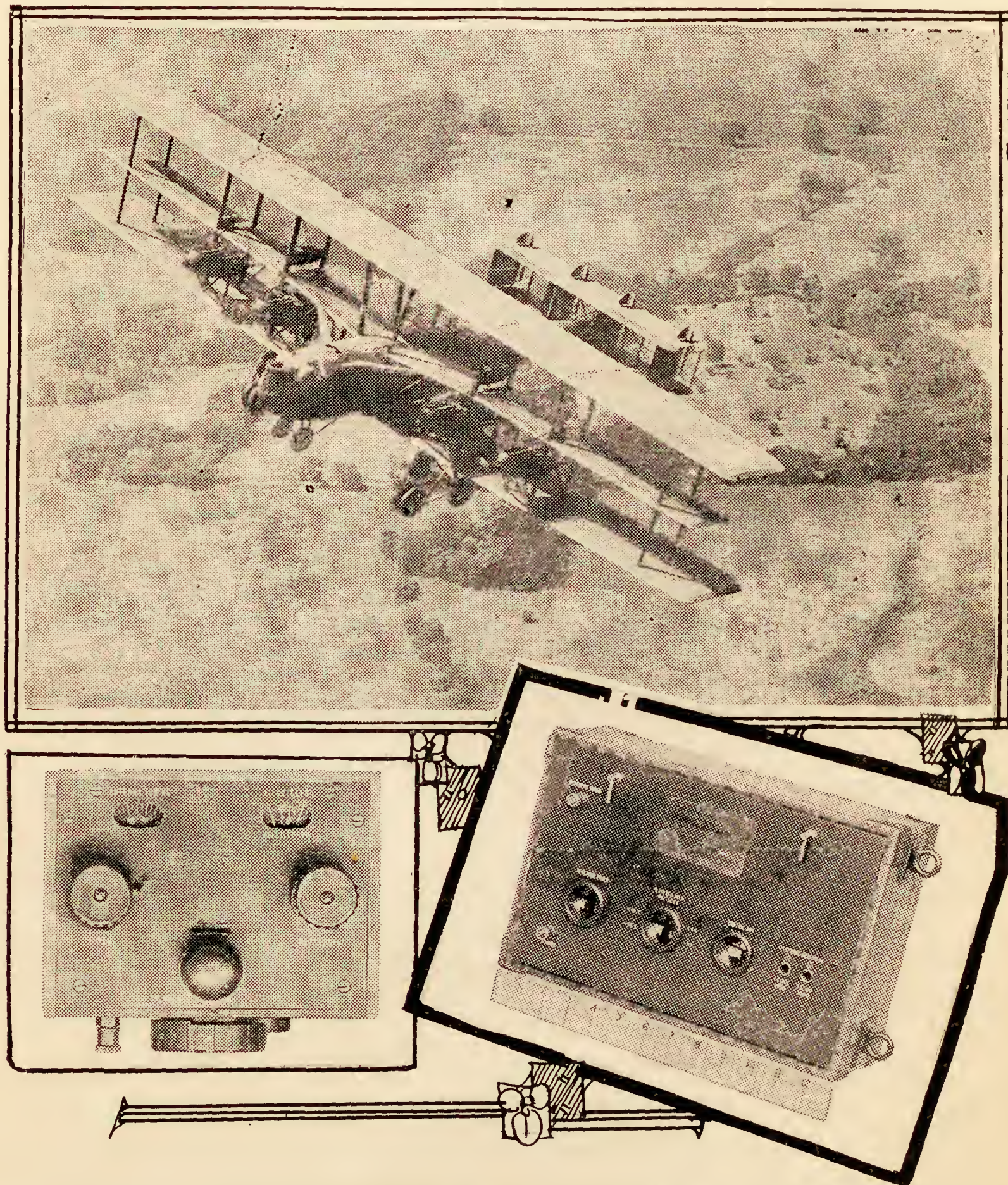
These include communications from the following: John W. Richard, Elysburg, Pa.; Philip A. Wachtel, Iola, Kansas; Lieut. Royal, Ann Arbor, Mich.; William Clunic, Flint, Mich.; R. W. Bockhorst, St. Louis, Mo.; Charles Schmoll, Cleveland and Bemer E. Albrecht, of Anderson, Ind.

WARNING

Officials of the International Air Races urge all prospective visitors to the International Air Races to place their hotel reservations early. The larger hostelries of Dayton have only a few rooms left at this writing. For reservations write to J. P. Breen 215 Dayton Savings and Trust Bldg., Chairman of Housing Committee, International Air Races, Inc., Dayton, Ohio.

"THE ARMY AIR SERVICE RADIO LABORATORIES AT McCOOK FIELD"

By Lieutenant Harry F. Breckel, A. I. R. E.



A Photo of the Barling Bomber in Flight. This Great Flying Monster is Equipped With a Radio Outfit After the Type Shown in the Inserts.

ON visiting the Radio Laboratories of The Army Air Service at McCook Field, one is immediately impressed with the vast network of radio antenna suspended from various towering supports, bearing mute testimony to the important part that radio plays in the

development of one of our most important measures of National Defense.

We cannot help but observe that almost every conceivable type of aerial is used; a huge "Umbrella" type is suspended from a tall water tower; a "Directional" anten-

na on the Belin type is located in an open space to one side of the laboratory for the purpose of taking bearings of radio signals; above the laboratory building proper we see numerous other types either undergoing tests, or actually being used for regular reception of official communications from such points as Washington, or other Air Service Flying Fields.

On entering the Laboratory Office we are introduced to Captain Murphy, U. S. A., the officer in charge, who informs us, "that a very interesting study of the effects of induction and electro-static disturbances, as set up or created by the ignition systems of aeroplane motors, on receiving sets used in the Air Service, is being conducted by the engineering staff" and, "would we like to observe the experiment?" We accompany him to a large open room in one section of the laboratory building where we are greeted with the high pitched whine of an airplane type generator used for supplying the plate current of an Air Service radio telephone transmitter and the familiar long, drawn-out "hello-o-o-o-" of a radio engineer engaged in testing it. Gazing about we observe a veritable maze of radio equipment of all types, both receiving and transmitting and we cannot help but feel that this room would prove a sort of fairyland for the average radio fan, for with the apparatus gathered therein he could try out circuits to his heart's content.

Passing over to the opposite side of the room we note a group of radio experts busily engaged in studying the records of an "Oscillograph," which is being used in connection with the observance of the effects of inductive and electro-static charges as induced in the radio receiving apparatus on board airplanes, by the ignition system of the motor. Laid out on the floor is a complete airplane ignition system, including the "distributor," spark plugs, (with high-tension leads connected thereto) and a storage battery which supplies the primary current to the ignition spark coil. Close by and mounted on a table is a complete receiving set of the latest and most sensitive type, connected to a loud speaker of the conventional type. This receiver is connected to a small aerial such as is generally used on planes and the ground connection as we know it is connected to a "counterpoise ground" which is merely a system of wires similar to the antenna and which is suspended below the aerial in lieu of a ground which of course cannot be obtained on the plane in flight. On the far side of the room there is a complete radio telephone transmitter connected to a miniature antenna and counterpoise ground.

In the experiment being conducted, the ignition system as laid out on the floor represents the motor ignition circuits on a plane in flight, the receiving apparatus and loud speaker representing the radio receiving equipment in use on the same plane by the operator and the radio telephone transmitter on the far side of the room, taking the place of a field radio station trying to establish communication with the pilot of the plane.

Upon starting up the transmitter and throwing the re-

ceiver on the loud speaker, the voice of the operator could be clearly and loudly heard about the room without a sign of interference, but the instant the ignition system on the floor was put into action, the interference became terrific and of such volume that it was impossible to hear the desired signals at all. When it is realized that some of the larger planes have as many as four propelling motors with their individual ignition systems and that the necessity for uninterrupted radio communication with planes in flight, (which is a virtual impossibility under the above handicap) is of paramount importance in modern warfare, the overcoming of this problem constitutes a very distinct step forward in the furthering of the efficiency of our air force radio system. And this is what the staff of experts at McCook Field have succeeded in doing.

With the interfering ignition system going full tilt, one of the engineers covered it with a layer of empire cloth, an insulating material capable of withstanding high voltages and over this he placed a copper gauze screen which was grounded to the motor frame. The instant this was done the interference caused by the ignition system was almost entirely eliminated, whereupon a similar screen was thrown over the storage battery and the leads therefrom, which action caused the complete elimination of the disturbances set up in the receiving equipment through induction or by electro-static effects.

This experiment very definitely located the source of and provided a remedy for, the terrific interference encountered by airplane radio operators and which made it next to impossible to copy any signals save those of strong audibility. The outcome was that all air service planes having radio equipment on board will have their ignition systems completely shielded by a metallic covering which will be grounded to the motor frame. Each lead to the spark plugs, the leads from the magneto or spark coil to the distributor, the leads from the storage battery, the storage battery itself and the distributor proper, every wire that is a part of the ignition system, all will be carefully shielded or covered with a copper screen which will effectually absorb and prevent electro-static and induction strays or currents, from interfering with the reception of radio signals on planes in flight.

We next asked Captain Murphy, "What is the latest type of receiving equipment used on army planes?" and we were then shown the most compact form of super-heterodyne receiver ever observed by the writer. The complete equipment is illustrated in the accompanying photographs. The design of this particular type of receiver is very unique in that it comes in two separate units, one of which (the larger cabinet) incorporates the radio and audio frequency amplifiers including tubes and batteries, and the other cabinet incorporating the necessary controls for tuning to the various wavelengths and the detector tube and control rheostat therefor. The larger cabinet is only twelve inches square (panel size)

(Continued on page 18)

Home Stretch Before World-Flyers



Lieut. Lowell H. Smith
Commander of the World
Flight and pilot of the
flagship "Chicago".



Lieut. Leigh Wade
Pilot of the "Boston"



Lieut. Erik Nelson
Pilot of "New Orleans"

A GAIN headed "west" with some 18,000 miles behind them and 244 flying hours out of Seattle the six sun-bronzed and drawn-faced American aviators are at this writing at Brough, British Isles. The Douglas World Cruisers, although looking not much worse for the wear and tear of this long and hazardous journey through miles of Arctic seas, over vast stretches of tangled jungles, over rugged mountain peaks and sun-baked desert lands are being carefully groomed for the last supreme test marking the long jaunt from the Orkneys across the Atlantic via Iceland and Greenland. Kirkwall, in the Orkney Islands is the last stop to be made by the American aviators on European soil.

At our last writing we found the aviators getting ready to leave Bangkok, Siam, for the next hop to Bandar Abbas, Persia. Remaining in Bangkok but a single day to make repairs the aviators flew directly west, and after covering 100 miles, crossed the Siam-Burmese border line in the apex of the mountain range. At Tavoy they were met by the U. S. Destroyer *Pruitt*, and after refueling they passed on up the Burmese coast, flying northward and reaching Rangoon on the afternoon of June 21, covering the distance of 410 miles in 7 hours and 10 minutes. This trip was made with broken wires on the "Boston" and "New Orleans" caused by the heavy seas while taking off at Tavoy. The flyers were enthusiastically received at Rangoon and every facility was placed at their disposal. However, during the night an unforeseen delay was encountered when a native sampan collided with the anchored ship of Lieutenant Nelson, causing considerable damage to the wings. New wings were in storage at Calcutta a distance of 845 miles so Lieutenant Nelson, with his equally adept mechanic, Lieutenant Jack Harding repaired the plane temporarily. Later a further delay developed here by the illness of Lieut. Lowell H. Smith, commander of the flight, who acquired an acute intestinal disorder through drinking bad water at Tavoy.

On June 26, the flyers resumed their flight to an emergency station established by the American Destroyer *Sicard* at the mouth of the Bassien River, between Rangoon and Akyab. Refueling at this point the flight

was immediately resumed, the planes landing at 2:35 p. m. at Akyab.

At this point the flyers had covered a total of 11,690 miles since leaving Santa Monica, California, with some 18,636 miles yet to go. The flyers took off on the next day, June 27, and covered the distance of 445 miles to Calcutta by the afternoon of this date. Calcutta is the terminus of the third division of the around-the-world flight as determined in the original plans.

The flyers spent three days in Calcutta to refit the cruisers with new wings and motors and to replace the pontoons for use in landing on water for wheels which was used until England was reached. The flight commander still experienced his visits of the "jinx" when in the course of his work in repairing his plane he slipped, and fell from a ladder, fracturing a rib. Lieutenant Smith with this injury refused to hold up the flight and continued on June 30 with the flight to Allahabad.

Just before sunrise the next morning the flyers took off for Ambala, 530 miles away, passing up the originally planned landing place at Delhi on the advice of Lieutenant Halverson, advance officer of the fourth division of the flight, who decided the airdrome there as too restricted in area to be safe. They reached Ambala in 5 hours and 20 minutes, passing through terrible thunder storms enroute. On July 2, at 9:30 a. m. the flyers left for Multan, flying along the fringe of the Great Indian Desert and in 4 hours and 42 minutes had completed the flight of 425 miles. During this flight they ran into severe sand storms and suffered from the excessive heat.

At 6:10 a. m. flight was resumed from Multan, heading down the valley of the Indus toward Karachi, on the Arabian Gulf. Karachi was reached at 1:11 p. m., where after remaining three days the airmen again took off for Charbar, Persia, and covered the distance of 330 miles by middle afternoon. Before the end of the day they covered an additional 330 miles to Bandar Abbas, Persia. During the next four days the aviators made remarkable progress, reaching Constantinople on July 10, after traversing close to 2,000 miles.

From this city the flight proceeded with remarkable

speed via Bucharest, Vienna, Strassbourg to Paris, which city was reached July 14, the flyers landing midst a rousing demonstration at the Le Bourget airdrome. From this point the flyers proceeded on their way on July 16, across the English channel, landing after a three hour flight at the London airdrome of Croydon, where another throng of cheering friends greeted them.

Although many dangers and uncertainties still confront the path of the flyers their ability in making up some eighteen days of lost time since leaving Japan gives them a decided advantage and high spirits. Their remarkable dash from the Japanese Islands, across Asia and Europe, places them in position to soon pass through the northern Atlantic which before many weeks will be locked again in chains of treacherous ice floes.

THE BRITISH EXPEDITION

One of the first to greet the American flyers when they landed at Croydon was Mrs. Stuart MacLaren, wife of the British round-the-world flight commander. She learned that although the American planes passed quite near the British flyers on their flight in the opposite direction the expeditions did not communicate with each other. On July 16, the Vickers "Vulture," British amphibian plane in which the English flyers, Flying Officer Plenderlieth, Sergeant Andrews and Squadron Leader MacLaren are attempting to circle the globe hopped off from Yeteforu, island of Paramashiru, one of the Kurile group.

For several days after leaving this point the flyers were lost to the world and the press expressed uneasiness in reports that Japanese Destroyers at Paramashiru Island, where the flyers should have landed, could find no trace of them. Later the plane was found not far from the point of take off at Yeteforu, where it had been forced to turn back and take shelter from heavy winds and fog.

The flyers now face the dangerous expanse of the northern Pacific, where the American expedition all but suffered disaster on many occasions.

MOTHER OF MAJOR MARTIN DIES

Mrs. Nancy J. Martin, devoted mother of Major Frederick L. Martin, former commander of the United States round-the-world flight squadron, died at a hospital July 1, in Connersville, Indiana. Major Martin, learning of his mother's critical condition flew from Chanute Field in an airplane and was at his mother's bedside during her last hours.

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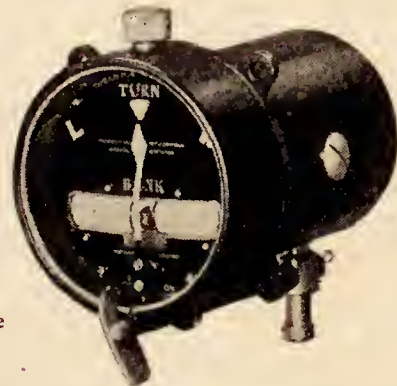
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Belgium Wins James Gordon Bennett Cup

The International Free Balloon Classic, the James Gordon Bennett Cup Race, is now a matter of history. For thirteen years since 1906 it was competed for by selected free balloon pilots from various countries, the conditions governing the permanent award of the cup requiring a competing country to win the race for three consecutive years. Lieut. Ernest de Muyter, of Belgium, by his victory in the last race which started from Brussels, Belgium, on June 15 last, clinched the cup for his country, for he was also the victor in the events for 1922 and 1923, the former starting from Geneva, Switzerland, and the latter from Brussels, Belgium. In addition to winning the cup for his country, Lieut. de Muyter also gained the highest individual honors in the history of this international aeronautical classic, for his last victory was the fourth he had achieved for his country, he being the winner of the race which started from Birmingham, Alabama, in the year 1920.

Seventeen contestants participated in the balloon classic this year, the three entrants from the United States being Captain H. E. Honeywell, piloting the "Uncle Sam"; W. G. Van Orman, piloting the "Goodyear"; and Major Norman W. Peek, Army Air Service, piloting the latest type of Army balloon.

Newspaper reports state that Lieut. de Muyter covered a distance of 745 kilometers. The official report on the race is lacking at this time. It is hoped to publish Major Peek's report in a future issue of Slipstream.

In the matter of victories won, Belgium shares honors with the United States, each country winning four times. France holds the record for the greatest distance covered, for in 1912 in the competition which started from Stuttgart, Germany, A. Bienaime covered 2,191 kilometers. The runner-up was A. R. Hawley (U. S.) the winner of the 1910 event, starting from St. Louis, with 1,887.6 kilometers.

It may be of interest here to give a summary of the results attending the twelve competitions which were held before the Belgian Aero Club became the permanent possessor of the cup. It should be stated here that due to the World War no competitions were held from 1912 to 1920. The statistics here given were furnished by the National Aeronautic Association.

It is hoped that the permanent award of the cup to Belgium will not mark the end of this international free balloon competition, which is always a source of world wide interest, particularly amongst the aeronautical element, and that some public spirited individual will offer another trophy to sustain interest in free ballooning, not only from the aeronautical standpoint but from the element of sport which it engenders, for as a sporting contest this race leaves nothing to be desired.

Newspaper reports contain a rumor to the effect that King Albert, of Belgium, will offer an international cup to replace the Gordon Bennett Trophy. We hope that this will come to pass.

Winners of the Gordon Bennett Balloon Races

Year	Starting Point	Winner	Country	Distance	Duration
1906	Paris, France	F. P. Lahm	United States	647 kil.	22 hr. 5 min.
1907	St. Louis, Mo.	I. Erbsloh	Germany	1403 kil.	40 hr.
1908	Berlin, Germany	Col. Schack	Switzerland	1212 kil.	73 hr.
1909	Zurich, Switzerland	E. Mix	United States	1121 kil.	35 hr.
1910	St. Louis, Mo.	A. R. Hawley	United States	1887.6 kil.	44 hr. 25 min.
1911	Kansas City, Mo.	Gericke	Germany	758 kil.	12 hr. 28 min.
1912	Stuttgart, Germany	A. Bienaime	France	2191 kil.	46 hr.
1913	Paris, France	Ralph Upson	United States	618 kil.	43 hr. 10 min.
1920	Birmingham, Ala.	Lt. de Muyter	Belgium	1769 kil.	40 hr.
1921	Brussels, Belgium	Capt. Armbruster	Switzerland	766 kil.	27 hr. 23 min.
1922	Geneva, Switzerland	Lt. de Muyter	Belgium	1372 kil.	25 hr. 45 min.
1923	Brussels, Belgium	Lt. de Muyter	Belgium	1115 kil.	21 hr.

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(Continued from page 14)

and about six inches deep, while the smaller is only six inches square (panel size) and about five inches deep. Special tubes of the so-called "peanut" variety are employed the complete receiver being one of the most rugged and yet, most sensitive types in existence. And for actual performance it is unsurpassed in standing, it being readily possible to listen in to such broadcast stations as WGY, Schenectady, N. Y., WEA, New York City, KDKA, Pittsburgh, Pa., and other higher powered stations without the use of an aerial or loop. One could sure play a wonderful game of "radio golf," that latest game of the midnight listener, with a receiver like that. The circuit incorporated in this receiver, it is understood, is of the so-called "Improved Super-Heterodyne" type, with of course, such modifications as have been developed by the Signal Corps of the Army, and the Air Service.

The outstanding feature of this receiver is that it is installed in the plane in two sections, the larger cabinet containing the radio and audio frequency amplifiers being mounted out of the way in the rear of the cockpit and the smaller control cabinet is mounted directly in front of the pilot, which method helps in the conserving of space, which, needless to say, is very limited.

Special sound-proof head phones are used with the receiver, these being mounted directly in the pilot's or observer's helmet, the ordinary rubber caps of the receivers being covered with a soft layer of felt which further tend to exclude extraneous noises and which make it possible to wear the receivers for long periods during sustained flights without tiring the ears.

The standard type of radio transmitter was next inspected and it is also a masterpiece of radio designing. Although of sufficient power to cover a range of several hundred miles, it occupies a space not much larger than that taken up by the average receiving apparatus of the broadcast listener. The transmitter is of the vacuum tube type, the circuits of which are so arranged that the operator can use it for voice, buzzer telegraph or straight continuous wave transmission, the latter method being used when it is necessary to carry on communication over long ranges which cannot be covered when the voice or modulated method is employed.

Current for the transmitter is furnished by suitable generators which are driven by means of a small air propeller mounted directly on their armature shafts.

The antenna used for both transmission and reception comprises, generally, a single, stranded phosphor bronze wire of good tensile strength and which is lowered beneath the plane while it is in flight, by means of a hand reel, a weight being affixed to the lower end of the wire to keep it in a position as nearly vertical as possible. The wavelength of the transmitted signal is controlled by simply varying the length of the aerial wire by means of the hand reel, it being increased by letting out more wire or decreased by reeling in a portion of it.

The ground, is of course, of the counterpoise type, comprising a system of wires suspended directly below, or even built into the wings of the plane. All other metal parts, such as strut guy wires, the motor frames, etc., are also connected to this system to further improve its efficiency.

Remembering that the radio experts at this field had succeeded in developing the art of "radio control" to a point where it could be considered fairly practical, they having been successful in designing a "radio car," which could be controlled at will by means of radio impulses transmitted on various wavelengths, or by certain groups of code characters we asked "whether they had ever applied the system to a plane actually in flight" and we were then shown a small plane of the scouting type which, it was stated had actually flown for varying periods totaling some ninety hours! Its movements during this period were entirely controlled by means of gyroscopes which controlled the balancing of the plane, as well as its movements to the right or left and which were in turn controlled by means of radio impulses transmitted by a special transmitter of the tube type. This plane it was stated, actually "took off," took a controlled flight through the air for a length time period and then landed without a pilot on board, without mishap, its movements being controlled by the means above stated. Space does not permit of a detailed explanation of the radio receiving and control devices on the plane which made this feat possible but it may be stated that it comprised a special receiver along with a system of very delicate relays which in turn controlled the currents flowing in other electrical devices which controlled the movements of the plane's controls.

Using this system it would readily be possible to load a plane with either gas or explosives, and, without a man on board, send it speeding into enemy territory to wreak destruction without imperiling the lives of the pilots as was the case during the late war. And not only that, but it could also be made to return to its base if it were not destroyed by an enemy during the flight. It is not considered that flights of this nature would be of lengthy duration or distance unless the movements of the plane were controlled by radio impulses transmitted by an accompanying plane which could hover out of danger and keep it in view, which would be very advantageous in that more important objectives could be singled out and destroyed. There is little doubt but that the feature of "radio control" is destined to play a vital part in any future conflict which might arise and the service which has the best developments at its disposal, will have a decided advantage in its favor.

Asking "what the Air Service considered the outstanding radio development of the year" Captain Murphy expressed the opinion that in all probability the "Radio Beacon" method of guiding airplanes on long flights over unfamiliar territory, or at high altitudes above the clouds which prevented the observing of landmarks as an aid to navigation is the most important development to date.

This is accomplished by means of directional radio transmission. The transmitter or "Beacon" comprises two large conventional loop aerials mounted on a common pivot. This beacon can be likened unto a book which is stood on end and opened in the middle, the pages on one hand representing one loop and the pages on the other hand representing the other loop. The loops are mounted at an angle with respect to each other in the form of a "V." These two loops are then energized alternately one transmitting the letter "N" and the other the letter "A" and the pilot of an airplane equipped with a receiver may maintain a fixed course by simply listening in to the two code letters and guiding the plane so that the intensity of the letters from the transmitter are of equal intensity. No matter what the weather may be, whether in strange territory or not and regardless of "drift" due to cross winds the pilot will be able to maintain a straight course, for if he should drift off the course, the difference in intensity of the code signals with respect to each other will warn him and tell him whether he is off his course to the right or left and he can take the necessary steps to change it. This system has been tested repeatedly with planes in flight over long ranges such as flights between McCook Field and Washington and has proven very successful, the greatest error in course never having been more than four degrees, a remarkably small error considering the distance flown. This valuable radio aid to aerial navigation is a joint development of The U. S. Bureau of Standards, The U. S. Army Signal Corps and The Army Air Service and will do much, it is believed, to further the efficiency of the service as a whole. It will undoubtedly prove of great help in night flying when it is impossible to observe land marks.

And finally, our visit completed we thanked our host and bid adieu to McCook Field, the high-pitched whine of the transmitter generator singing in our ears as the engineer radioed the plane roaring through the blue above to "come down," "He wanted to make a slight change in that control." And so the development of radio goes on and on unceasingly in almost every branch of modern engineering and science and we cannot but

wonder what new devices the morrow will bring forth, but of one thing we are certain and that is, that if our Army Air Service is ever called into action, it will be equipped with the last word in radio apparatus for which it has need.

(Copyright, 1924, by Lieutenant Harry F. Breckel.)

Airplane Dusts Poison to Kill Malarial Mosquito Larvae

"If poison dusting with the use of planes for the control of the boll weevil has proved so effective, why could not the same method be used to equal advantage in the extermination of other insect pests—for instance, malarial mosquitoes?" This question suggested itself to certain workers in the Bureau of Entomology, Dept. of Agriculture, with the result that plans were formulated to that end.

The region around Mound, Louisiana, is very swampy and badly infested with malarial mosquitoes. It is only about eighteen miles from Tallulah, La., where the boll weevil poison dusting was carried on. Dr. W. V. King, in charge of investigations of insects affecting the health of man at Mound, undertook the experiment. At his request the Air Service of the U. S. Army supplied the same specially equipped airplane used in the boll weevil campaign. Paris green was the poison dust used to attack the mosquitoes. It was heavily diluted with Tripoli earth.

The experiment proved very successful, the Bureau of Entomology reports. The planes could fly over parts of the swamps which otherwise were inaccessible. The trees did not interfere with the spreading of the poison dust, for the machines flew sufficiently high to avoid contact and circled them to apply it to the surrounding bog.

The use of Paris green, highly diluted with road dust or some similar substance, is recommended in certain cases by the United States Public Health Service. The airplane offers simply a wholesale method of application.

—Official Record, Dept. Agriculture.

AMUNDSEN ABANDONS POLAR FLIGHT

Financial difficulties have forced Roald Amundsen to abandon his Polar flight with airplanes this year.



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First Graduating Class in Aeronautics at New York University



Upper Row: W. Boesch; Gilbert Betancourt; Melville Bachrach.

Lower Row: J. Lederer; R. Contini; Alexander Klemin, Associate Professor of Aeronautics; Professor Collins P. Bliss, Head of the Department of Mechanical Engineering; Wm. Schwendler; Charles S. Stenson.

The first graduating class in Aeronautics at New York University met with a cordial reception at the hands of the Aviation world. The members of the class deciding on Aeronautics as a career, have, a few weeks after graduating, all been placed in suitable positions.

Messrs. Bachrach and d'Heedene have qualified for appointments at Langley Field with the National Advisory Committee: Mr. Schwendler is obtaining a valuable training under Grover C. Loening, who has in many ways rendered service to the University; Mr. Lederer is acting as assistant in the newly erected wind tunnel; Mr. Boesch has entered on the highly promising work of installing Beacons and Landing Lights with the Air Mail; Messrs. Betancourt and Contini are with the Curtiss Company.

The policy of the University is to admit only a few selected men to the Aeronautical Option in the Department of Mechanical Engineering, and to insist that they must be prepared to start at the very bottom of the ladder, and not expect rapid promotion in a pioneer and struggling industry. This policy is seen to be fully justified.

Thanks are due to the Aeronautical Chamber of Commerce for cooperation in suitably placing students.

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JUDICIAL STATUS OF HYDROAEROPLANE

A vessel may be any one of a number of things. For instance: A canal boat drawn by horses; a bathhouse upon floats; a raft; a scow; a dredge; a temporarily sunken drillboat; and last, but not least, a hydroaeroplane, or, at least, they are "vessels" when it comes to the jurisdiction of courts, and the admiralty courts are given jurisdiction over "vessels." So held the Court of Appeals of New York in *Reinhardt v. Newport Flying Service Corporation*, 133 *Northeastern Reporter*, 371, wherein an order of the Appellate Division affirming an award of the State Industrial Commission was reversed and the claim dismissed. The claim was for injuries from being struck by the propeller of a hydroaeroplane which was dragging its anchor and drifting toward the beach, while moored in navigable water. Judge Cardozo in the course of his opinion took occasion to say:

"A hydroaeroplane, while in the air, is not subject to the admiralty, * * * or so, at least, we may assume, because it is not then in navigable waters, and navigability is the test of admiralty jurisdiction. A hydroaeroplane, while afloat upon the waters capable of navigation, is subject to the admiralty, because location and function stamp it as a means of water transportation. Such a plane is, indeed, two things a seaplane and an aeroplane. To the extent that it is the latter, it is not a vessel, for the medium through which it travels is the air. * * * To the extent that it is the former, it is a vessel, for the medium through which it travels is the water. If a seaplane, incapable of flight, breaks its moorings and causes injury to man or ship, there will be a remedy against the offending res. If, moving upon the water, it becomes disabled, and is rescued on the high seas by a ship, it will be subject to a lien for salvage. We think the jurisdiction of the admiralty is not less where the structure found afloat is a seaplane and aeroplane combined. It is true that the primary function is movement in the air, and that the function of movement in the water is auxiliary and secondary. That is, indeed, a reason why the jurisdiction of the admiralty should be excluded when the activities proper to the primary function are the occasion of the mischief. It is no reason for the exclusion of jurisdiction when the mischief is traceable to the function that is auxiliary and secondary. Collision does not cease to be collision and a peril of the sea because the structure is amphibious."

FREEDOM OF THE AIR

Another court has had occasion to pass upon the most important question of the freedom of the air, the doctrine as to which is threatened with revision, because of the activities of the airplane and the radio.

Very recently a case came before Hon. John C. Michael, judge of the District Court of Minnesota, in which he squarely rules upon the right of airplanes to fly over one's property without being guilty of trespass.

The action grew out of an accident which resulted from an airplane, which had risen from a flying field adjoining the plaintiff's premises, falling upon his lawn and damaging his property.

The opinion is as follows:

"Plaintiff's premises are situate in St. Paul, a city of the first class. In June, 1923, one of the defendant's airplanes, by reason of some mechanical defect, became unmanageable while in flight, and fell upon plaintiff's lawn.

"This action is brought to recover damages for the resultant injuries, and to enjoin the defendants from operating any air craft over the plaintiff's premises, regardless of the altitude of such flights.

"This presents a new question, so far as court decisions are concerned, and there is a singular lack of legislation.

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both federal and state, in any attempt to define or regulate the right of air navigation.

"The only legislation on the subject in this state is chapter 433, Laws 1921, which goes no further than to forbid all trick flying or aerial acrobatics, or any flight at a less altitude than two thousand feet, over any city of the first class.

"The act impliedly recognizes the rightful existence of air navigation by this limited regulation, but no attempt is made to define the respective rights and liabilities of such navigators and the owners of the land over which air flights are made.

"In the present undefined state of the law upon this subject the plaintiff invokes the old common-law maxim, 'Whose the soil is, his it is from the heavens to the depths of the earth,' and claims that airplane flights over the plaintiff's land, no matter how great the altitude, constitute actionable trespass. If this is a fixed, unalterable rule of property, not subject to modification or exception, then the plaintiff's contention must be upheld.

"This rule, like many aphorisms of the law, is a generality, and does not have its origin in legislation, but was adopted in an age of primitive industrial development by the courts of England, long prior to the American Revolution, as a comprehensive statement of the landowner's rights, at a time when any practical use of the upper air was not considered or thought possible, and when such aerial trespasses as did occur were relatively near to the surface of the land, and were such as to exercise some direct harmful influence upon the owner's use and enjoyment of the land.

"A wholly different situation is now presented. We are passing through an age of marvelous achievements in the way of useful mechanical inventions, with the result that practical air navigation is now an accomplished fact. Its possibility of great public usefulness in rapid communication and transportation seems to already be well demonstrated.

"The upper air is a natural heritage common to all of the people, and its reasonable use ought not to be hampered by an ancient artificial maxim of law such as is here invoked. To apply the rule as contended for would render lawful air navigation impossible, because if the plaintiff may prevent flights over his land, then every other land-owner can do the same.

"Condemnation of air lanes is not feasible, because air craft cannot adhere strictly to a defined course.

"Common-law rules are sufficiently flexible to adapt themselves to new conditions arising out of modern progress, and it is within the legitimate province of the courts to so construe and apply them. This very rule has been modified by our Supreme Court in respect of subterranean waters. *Erickson v. Crookston, etc.*, 100 Minn. 481.

"When it is sought to enforce such a rule of law, the extent of the public interests involved on one side, as against the probable substantial injury to the private property owner on the other, is an important element of consideration by the courts. It is elementary in this country that private property is entitled to a full measure of protection.

"The air, so far as it has any direct relation to the comfort and enjoyment of the land, is appurtenant to the land, and no less the subject of protection than the land itself; but when, as here, the air is to be considered at an altitude of two thousand feet or more, to contend that it is a part of the realty, as affecting the right of air navigation, is only a legal fiction, devoid of substantial merit. Under the most technical application of the rule, air flights at such an altitude can amount to no more than instantaneous, constructive trespass. Modern progress and great public interest should not be blocked by unnecessary legal refinements.

"The accident in this case has been emphasized as evidence of a great menace from air craft to persons and property upon the land, and as furnishing a sufficient reason for banishing air flights altogether.

"True, there is some danger from this source; but such accidents are infrequent, and this hazard is infinitely less than is constantly encountered in every walk of life from various other causes. An occasional accident has never been considered a sufficient reason for suppressing a useful industry, but may justify reasonable legislative regulation.

"Failure to sustain the plaintiff's contention, relative to upper air trespasses, does not deprive him of any substantial rights, or militate against his appropriate and adequate remedies for recovery of damages and injunctive relief, in cases of actual trespass or the commission of a nuisance; hence the scope or the temporary injunction has been limited to enforcing compliance with the Minnesota law already mentioned."



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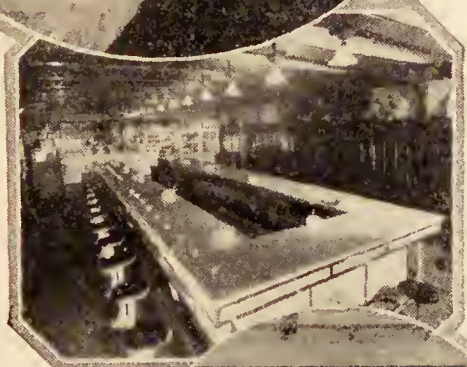
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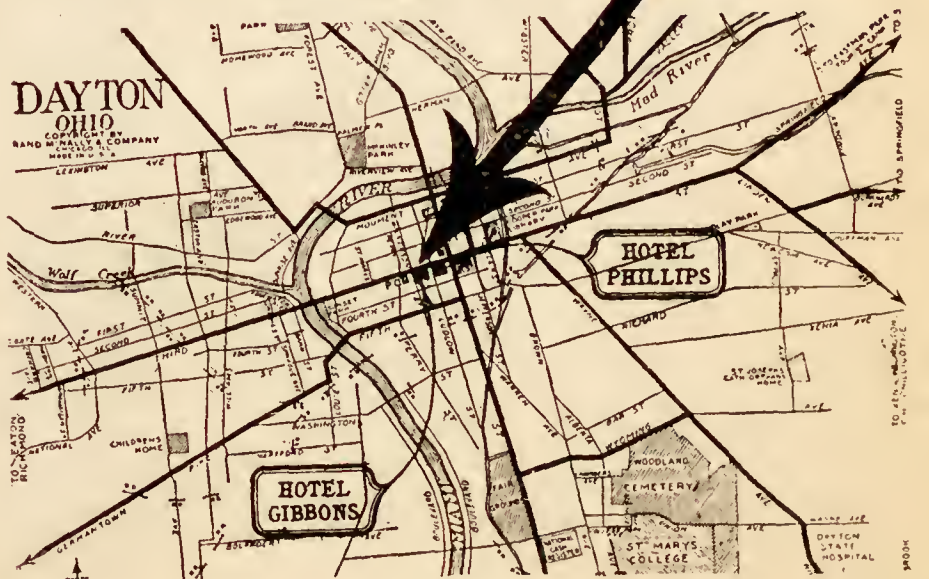
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Principles of Aerography

For the man who flies, or the student of climate and agriculture, this book reveals aerography not only as an exact science, but as one of the most fascinating of studies. Piloting the neophyte through the highways of upper air, it treats in exhilarating style the physical forces which may affect the traveler above the clouds or trade conditions below—forces such as winds, storms, floods, fogs, and atmospheric pressure.

Rainfall, snowfall, frosts, temperature all figure in this absorbing work. The whole is supplemented by excellent pictures of various aerial phenomena taken by the author.

A Cloud Atlas

The title alone would make one reach for it. No true airman, careful weather observer, or real lover of nature would willingly deny himself this delightful little atlas. With it one soars into the unknown, sees the clouds in all their mystery, variety and power, sees them above and sees them below. He learns with interest they may be traced, measured, weighed and studied with scientific exactness. All this is treated and explained not only in the text, but in photographs of marvellous beauty taken by the author.

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The British "Vulture" after she had been overhauled and Valsparred. The natives standing on the wings applied the Valspar to the body and wings.

Photo by Johnston & Hoffman

Another World Flier— Valsparred, of Course!

WHEN the British Round-the-World flier, Major Stuart Mac-laren, recently arrived in Calcutta, he took advantage of an enforced delay to have his "Vickers Vulture" thoroughly overhauled. After installing a new Napier-Lion engine and reconditioning the whole plane, he had the fuselage and wing surfaces completely refinished with Valspar, as a protection against the rigors of the resumed flight.

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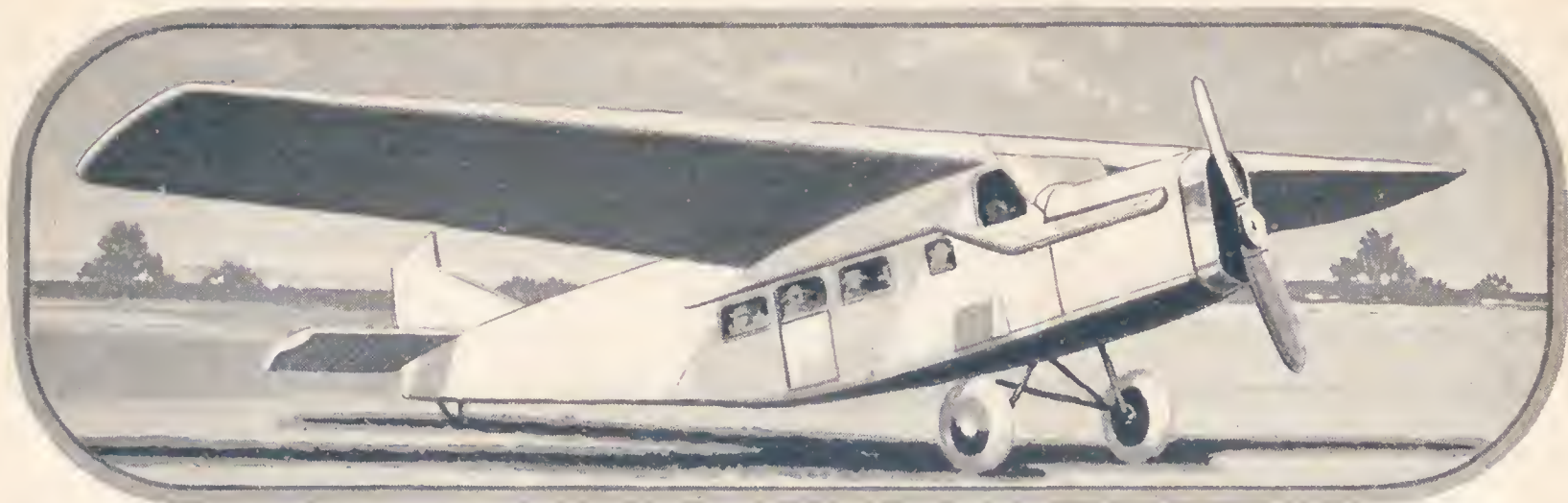
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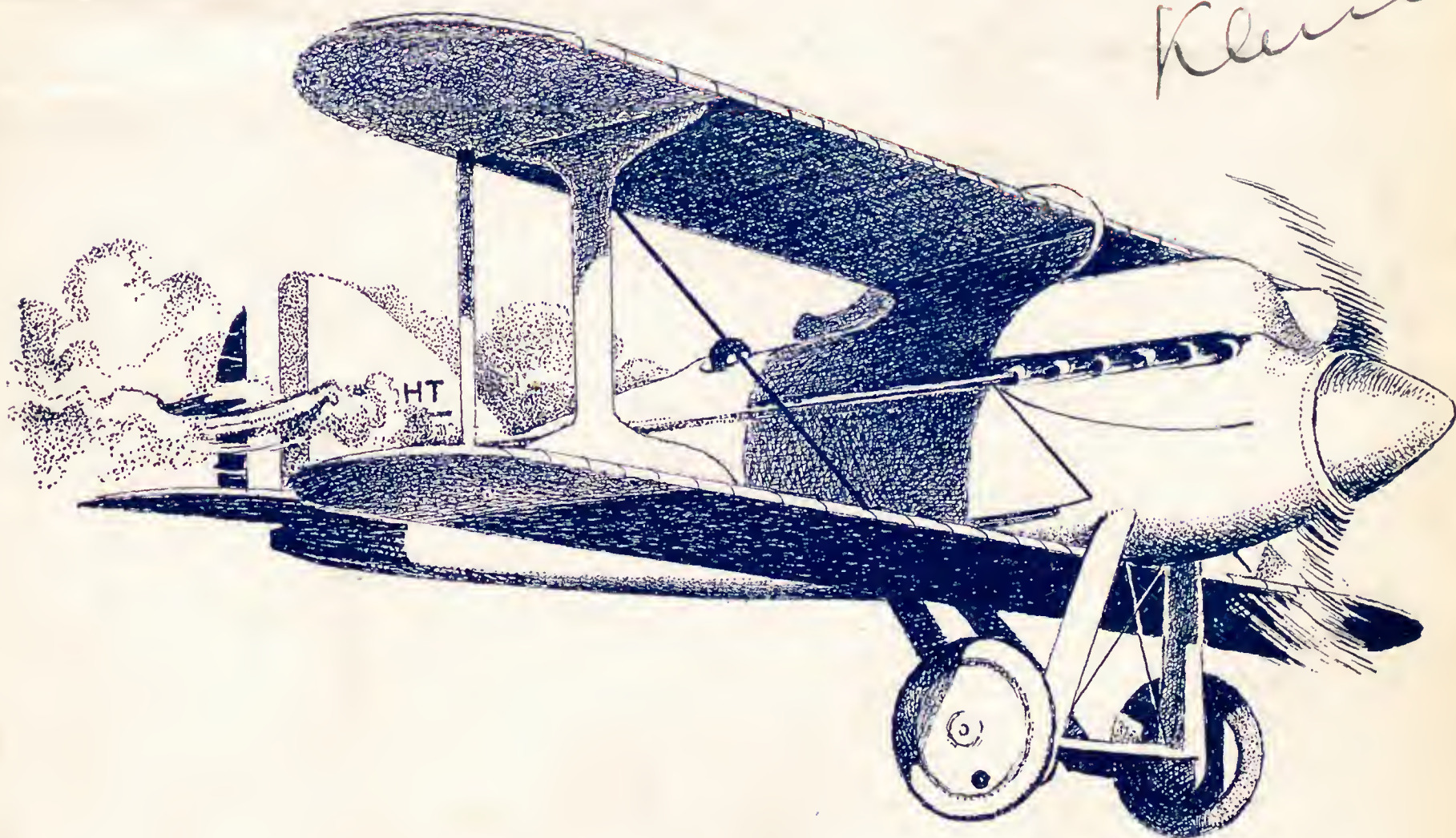
SEPTEMBER

Vol. 5, No. 8

1924

"THE BIRTHPLACE OF THE AIRPLANE,
THE CENTER OF AVIATION"

20 Cents the
copy



THE NAVY WRIGHT FIGHTER

INTERNATIONAL AIR RACES

HIGH SPEED OILS

In Emergency Cans

Our special leak-proof one gallon cans affords tourists service station and garage service in emergency. Take one with you.

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315 S. Main Street
DAYTON, OHIO

*Drain Pits at These Stations

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WHEN you see a National Cash Register on a merchant's counter, you know you are going to receive quick, accurate service. Long, tiresome waits are never necessary in stores where these machines are used.

Compare this kind of service with that which you receive in stores using old-fashioned systems. You will find that it makes quite a difference in your shopping.

The National Cash Register Company
Dayton, Ohio

Slipstream

SLIPSTREAM—The stream of air driven aft by the propeller.

VOL. 5 SEPTEMBER No. 8

PUBLISHED BY THE SLIPSTREAM PUBLISHING COMPANY
401 Beckel Bldg., Dayton, Ohio

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FRED F. MARSHALL..... Editor and Business Manager



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THE SPIRIT OF OLD



Courtesy Dayton Daily News

THE INTERNATIONAL AIR RACES

OCT. 2, 3 and 4, DAYTON, OHIO



"Rarin' to Go!"—This Navy Wright Racing Plane is hard to hold down even with the block set when she is being tuned up. This Plane will be seen in the Pulitzer Race event in Dayton this fall.

FARMERS and landowners in Montgomery County and in the vicinity surrounding Wilbur Wright Field are more than anxious to co-operate with air race officials, in the matter of successfully staging the races on October 2, 3 and 4.

This is evidenced by the report submitted by J. N. Downer, chairman of the sub-committee of the Grounds and Buildings committee, having in charge the matter of obtaining easements along the proposed race courses for the erection of proper markers.

Within a day after starting their work the committee members had obtained the signatures of the landowners for the placing of such markers on their land.

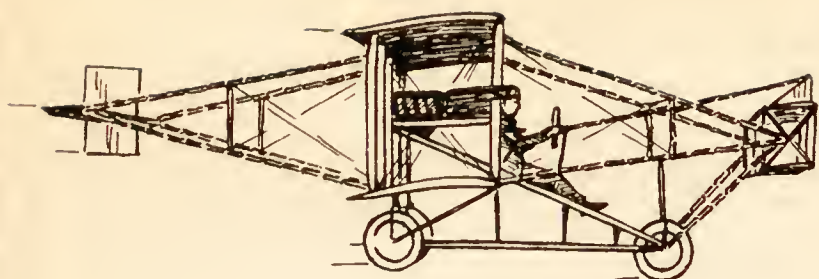
Six markers in all will be placed along the fifty kilometer course, which is to be used by flyers participating for the Air Mail Service trophy, John L. Mitchell trophy and the Pulitzer high speed race trophy, the concluding event on the three-day program.

The markers will be about sixty feet high and of such

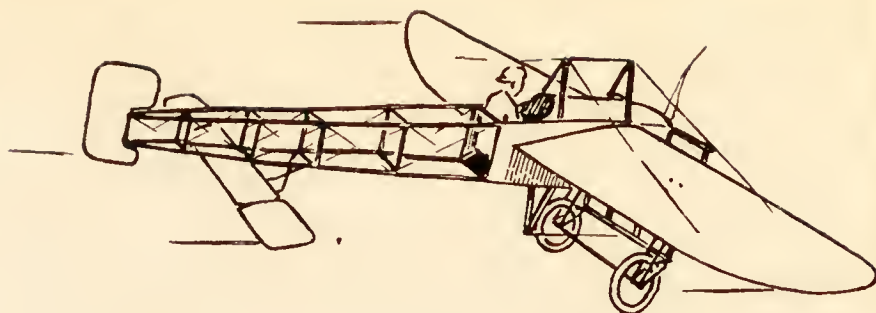
color and size as to be easily distinguished by the flyers.

Formal invitation to attend the International Air Races has been extended to officials of Aero clubs in twenty-three countries, which bodies are affiliated with the Federated Aeronautique Internationale, the status of which is similar to that of the National Aeronautic Association in the United States.

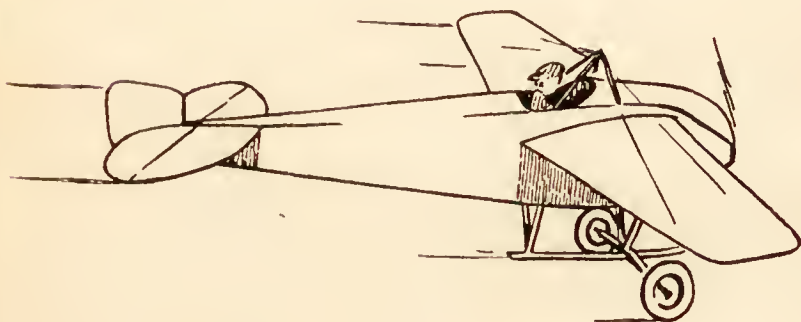
Such invitations have been forwarded by air race officials to Aero clubs in the following cities, where the official headquarters for that country are located: Buenos Aires, Argentine; Vienna, Austria; Brussels, Belgium; Rio de Janeiro, Brazil; Santiago, Chili; Pekin, China; Copenhagen, Denmark; Madrid, Spain; Helsingfors, Finland; Paris, France; London, England; Rome, Italy; Yurakucho, Japan; Christiana, Norway; LeHaye, Netherlands; Varsovia, Poland; Lisbon, Portugal; Bucharest, Rumania; Stockholm, Sweden; Berne, Switzerland; Prague, Czecho-Slovakia; Montevideo, Uruguay and Belgrade, Servia.



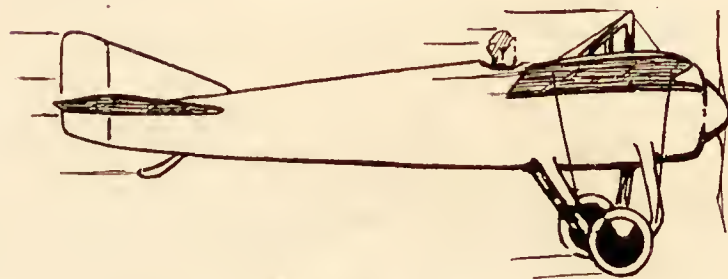
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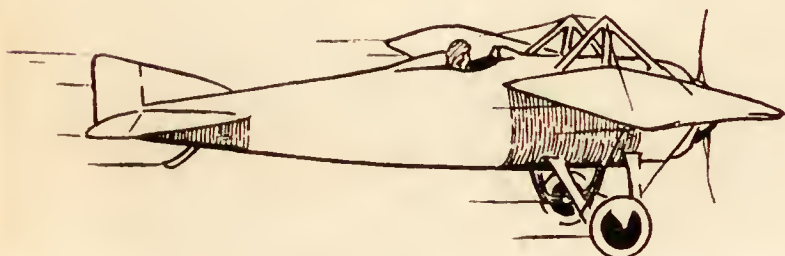
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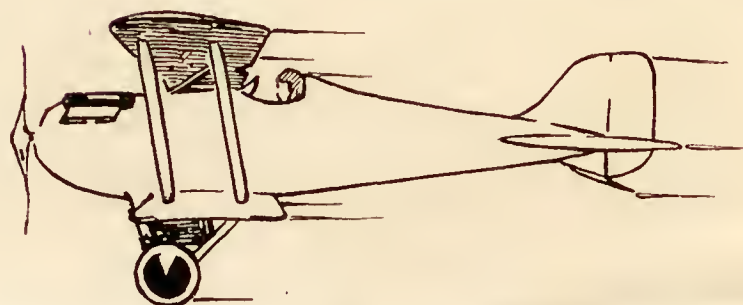
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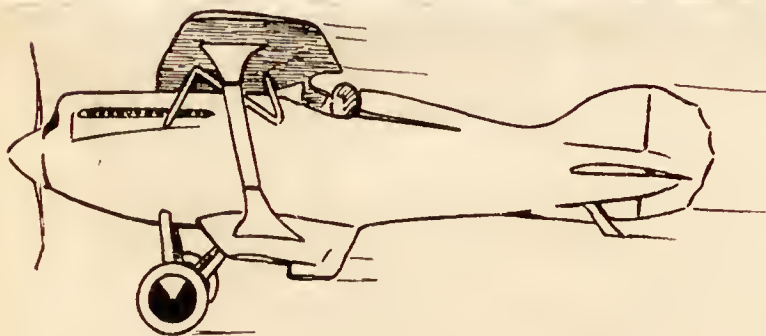
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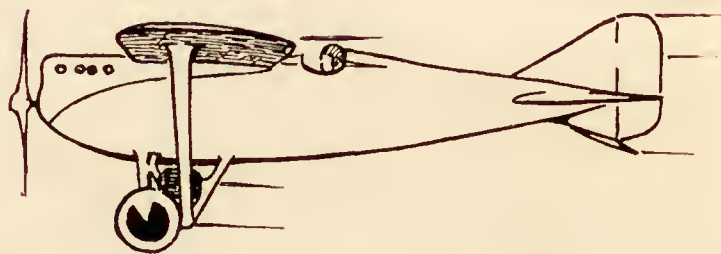
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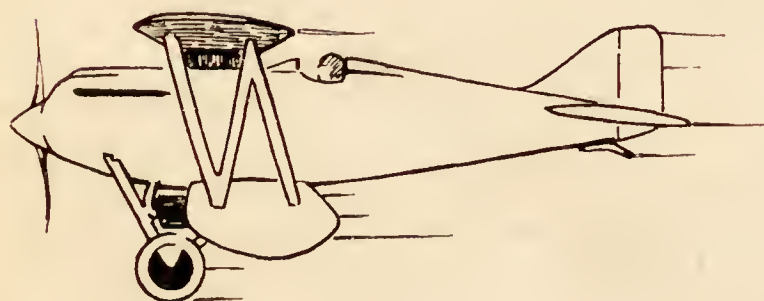
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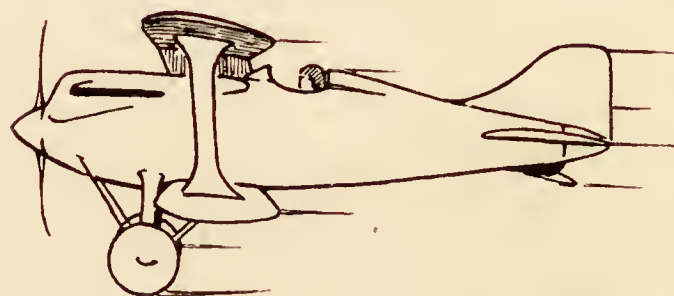
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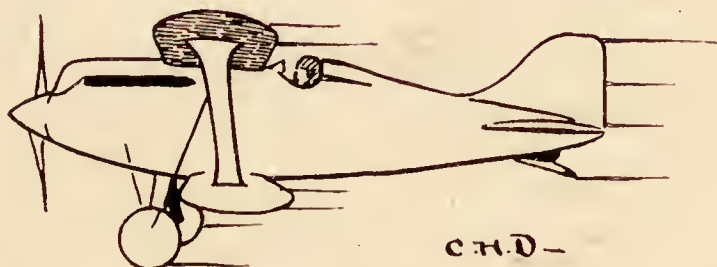
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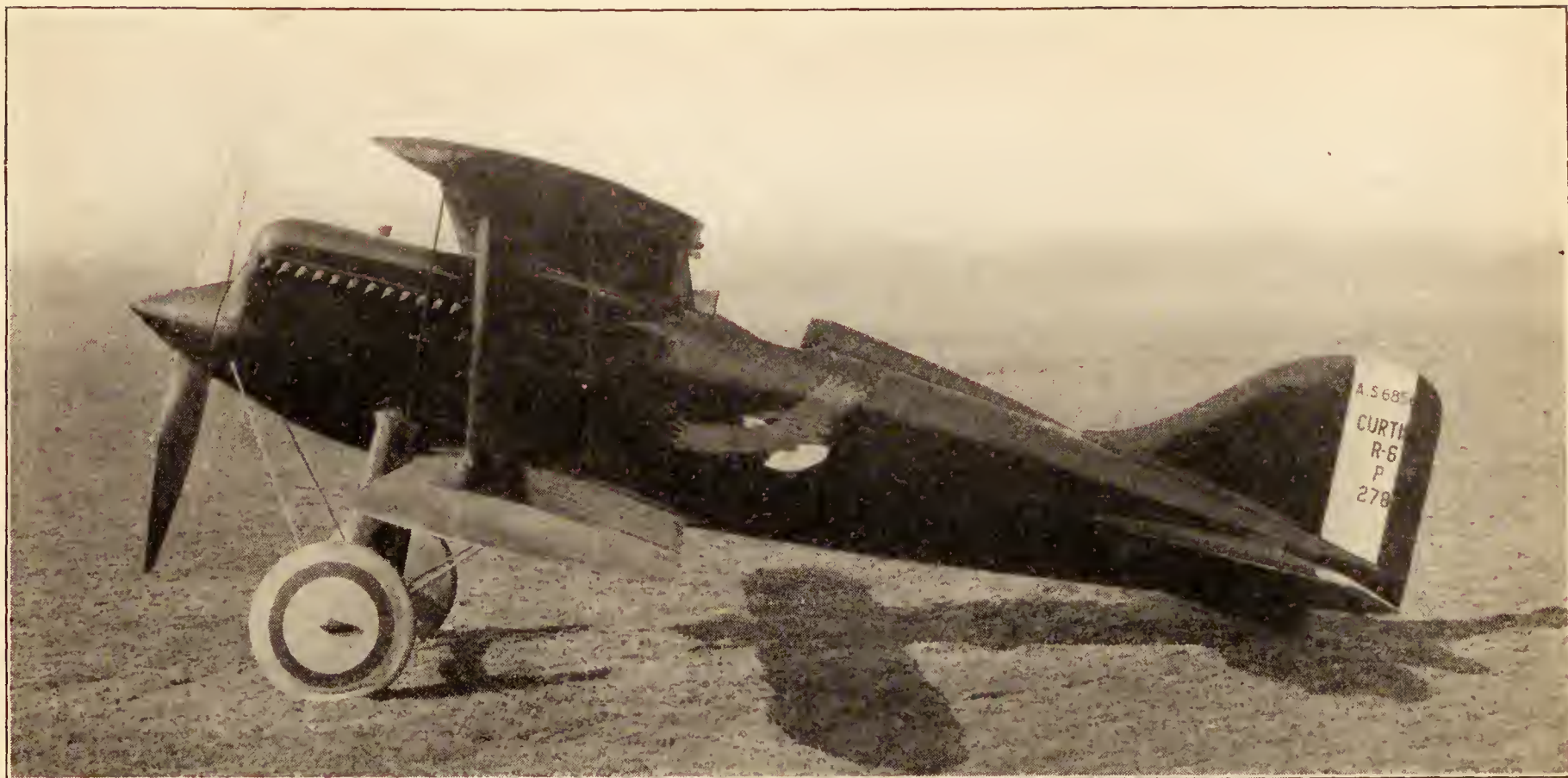
C.H.D.-

STAGES OF DEVELOPMENT IN THE STREAMLINING OF RACE PLANES

1—1909 Curtiss Racer.
2—1910 Bleriot Racer.
3—1911 Nieuport Racer.

4—1912 Deperdussin Racer.
5—1913 Deperdussin Racer.
6—1920 Nieuport Racer.

7—1920 Verville-Packard Racer. 10—1922 Army Curtiss Racer.
8—1921 Nieuport Racer. 11—1923 Navy Curtiss Racer.
9—1921 Navy Curtiss Racer.



The Curtiss Army Racer. It was in a Plane of this type that Lieutenant Russell Maughan spanned the continent between New York and San Diego, California, between dawn and dusk. It also won the Pulitzer Trophy in 1922, at Detroit, making 224 miles per hour with Lieutenant Maughan piloting.

Following the custom established several years ago, Arthur J. Davis, president and general manager of the Michigan Airways of Lansing, Mich., is planning to send all the officers and employees of the concern to Dayton to attend the races at Wright Field. It is expected that about twelve such representatives will attend the event.

Dayton and the International Air Races will be constantly before the people of New York, throughout the week of September 22, as a result of an arrangement made with air race officials, by the O. J. Gude Company of New York, outdoor advertisers.

Some five million people passing Times Square during that week and gazing upward will see material on the history book display of the concern, telling of Dayton and the plans for the race meet.

The following data for such display was suggested to Gerritt Weston, promotion manager for the firm and will in all probability be carried out in the final advertisement: DAYTON, OHIO, 540 air miles from here. "The Nation's Air Center." Scene on October 2, 3 and 4, of the International Air Races, on the field where the Wright Brothers made first public airplane flight. Program includes Pulitzer race for world's speed record, now more than four miles a minute.

Twelve races. Military Air carnival. \$50,000 in cash prizes.

Considerable favorable comment is being made on the official and souvenir program for the air races, which is about ready to be formally placed on sale in Dayton.

The book, which is of sixty-four pages is replete with historical data on Dayton and aviation and contains many

interesting photographs showing the progress in aeronautics in this and other countries.

Retail merchants and other business interests in the city kept their promise to underwrite the cost of publishing the book. A campaign among the merchants and commercial and industrial places in Dayton to secure funds to meet the cost of the publication more than made up the fund.

First formal entry in the Mulvihill model plane race and incidentally the first entry to be received for any event at the Air Races, came early last month from Bertram Pond, 1211 La Salle Street, Chicago, who also was a contestant in this event at the St. Louis meet last year. He plans to enter three models in the contest, the maximum number allowed him.

B. Russell Shaw, race executive, who received the entry assigned him to Race No. M-1 in the event.

The Advertising committee, of which T. C. McMahon is chairman, was very busy during the past month, distributing literature, posting bills and tacking up show cards, advertising the races in approximately 600 cities in the Central States. Activities in this connection were centered chiefly in Ohio, Indiana, Kentucky, West Virginia, Illinois and Michigan.

Large posters were placed along highways leading into large cities, while hotels, business places and other points of public contact were plastered with this material. In addition to this matter, thousands of advance information folders were distributed by this committee, co-operating with the Publicity committee, these pamphlets find-

ing their way to cities in practically every state in the Union.

Assisted by S. G. Somers, who is also connected with the Technical Data section at McCook Field, Mr. McMahon arranged for the sending out of nine trucks, each manned by a driver and poster, and each laden with the above mentioned advertising material, throughout the states mentioned.

In all, a two weeks' intensive campaign was conducted, the distributors reporting that interest in the races in every city they visited is at high pitch. The advertisers also visited the various county fairs held in Ohio and neighboring states, both with the trucks and with the aid of airplanes, distributing advertising literature, wherever it was possible to place it and where it would do the most good.

Entry of Lieut. Charles Steinmetz, Army Air Service officer stationed at Bolling Field, Washington, as a contestant in the Liberty Engine Builders' race at Wright Field, has been received by B. Russell Shaw, race executive.

He is the first Air Service Pilot, selected by Major General Mason M. Patrick, as a contestant in the races as representative of the Air Service, to formally file his entry.

Judge Roland W. Baggott, judge of the domestic relations court, has agreed to act as master of ceremonies at the smoker to be held in connection with the races, on Saturday night, October 4.

Acceptance of such duty was made by Judge Baggott in a letter received by Walter B. Moore, chairman of the entertainment and reception committee.

This smoker, which will be an informal affair, will be the occasion for the presentations of trophies, plaques and medals to the winners of the different events on the three days of the races.

The international advertising that is being given Dayton, through the staging of the International Air Races at Wilbur Wright Field this October, is shown in the lengthy article, dealing with plans for the air classic, in the July 24 issue of *Les Ailes*, a French aviation publication, issued in Paris, a copy of which recently was received by race officials.

The article stresses the importance of the Pulitzer high speed trophy event, in which Sadi Lecointe, French air ace is a contestant and cites the friendly feeling between France and the United States, evidenced through the latter's invitation to France to compete in the different events.

The item concludes with a complete list of racing events and the different prizes offered the winners.

Lighter-than-air manufacturers and enthusiasts are deeply interest in the Air Races at Wright Field this October, some of the most prominent of these in the country having signified their intention of attending the air classic, despite the fact that the race meet will be virtually for heavier-than-air craft.

Information to this effect was brought to Dayton recently by Herbert Maxson, in charge of aeronautical publicity for the Goodyear Zeppelin Company of Akron. Mr. Maxson came to Dayton to make reservations for such visitors during their stay in Dayton.

Most prominent among the visitors will be Capt. Ernest A. Lehmann, vice-president and officer in charge of aeronautics of the Goodyear Company. He has been named by the U. S. Air Service as pilot for the ZR-3, the giant Zeppelin, which is to be brought over to this country from Germany next month.

Others from the Akron plant, who are contemplating attending the races, are Herman T. Kraft, chief aerial engineer; P. W. Litchfield, vice-president; G. M. Stadelman, president of the concern and Mrs. Stadelman, who incidentally is president of the Akron Women's chapter



The Verville-Sperry Racer, which won the Pulitzer Speed Trophy at Long Island, N. Y., in 1920, when Lieutenant C. C. Moseley drove it over the course at 190 m. p. h.



The Curtiss Navy Racer winner of the 1923 Pulitzer Race event at St. Louis, when Lieutenant Alford J. Williams, Jr., U. S. N., drove it over the speed course at the tremendous speed of 243 m. p. h. Later in speed tests at Mitchell Field it was driven at a speed of 266 m. p. h. It will try again for the honors at Dayton against foreign entries.

of the National Aeronautic Association; W. T. Van Orman, aeronautical engineer and winner of the national balloon race at San Antonio last year; W. C. Young, manager of aeronautics and Hugh Allen, director of publicity for the firm.

Officers at Wright Field, where the the Air Races are to be staged this October are making elaborate arrangements for what promises to be one of the biggest military reunions staged since the close of the World War, during the three days of the meet.

With the assurance given by the Chief of the Air Service that flyers and officers will be permitted to attend the races and incidentally the reunion, some 400 such officers from practically every military post and air field in the country, to date have signified their intention of coming to Dayton for this event.

Plans for the reunion, which include a military hop, the like of which for elaborateness has never before been staged, are being completed by Major George Brett of Wilbur Wright Field, who is in charge of the committee for this purpose.

That the officers at the post are more than willing to aid in any way possible to make the reunion a success, is shown by the fact that each officer has agreed to share his quarters, ordinarily large enough for two men, with ten officers, if this is found necessary.

Special mess quarters will be established on the field for the visiting officers and executives and their families

who are expected to attend the event, in connection with the race meet.

The reunion will not be limited to flying officers alone, to Air Service executives as well. Major General Mason M. Patrick and Brigadier General William Mitchell, chief and assistant chief, respectively of the Army Air Service have agreed to come for the event and will be guests of Major A. W. Robins, commandant at Wright Field, during their stay in the city.

This reunion of army officers will not be the only gathering of flyers at which they will reminisce of days together during the World War. Arrangements are being made by George A. Wies, Jr., secretary of the Air Service Flying class of 1922 at Kelly Field, Texas, to have all members of such group attend the races and have a reunion of their own.

Following is a partial list of the more notable army officers and flyers from practically every military post and air field in the country, who are expected at the military reunion: Lieut. Richard T. Aldworth, assistant engineering officer, Kelly Field; Major and Mrs. Frank M. Andrews, executive officer, Kelly Field; Lieut. Clayton L. Bissell, aide to General Mitchell; Capt. Thomas Boland, Ft. Riley, Kansas; Capt. Charles B. Bubb, commandant, 41st Aero squadron, Kelly Field; Major Henry B. Clagett, commandant, Bolling Field; Major Fred H. Coleman, air service supply officer, Langley Field; Lieut. Col. Seth W. Cook, air officer, fifth corps area, Columbus; Lieut. John C. Corkille, instructor, Brooks Field;

GOVERNMENT ACCEPTS NEW McCOOK FIELD SITE AT DAYTON, OHIO



A PROSPECTIVE LAY-OUT OF THE McCOOK FIELD EAST OF DAYTON

THE public-spiritedness and national patriotism of Dayton citizens was gratefully acknowledged on Wednesday, August 13, by President Calvin Coolidge, when, at the hands of Frederick B. Patterson, president of the National Aeronautic Association, the Chief Executive accepted on behalf of the nation Dayton's gift of the finest and largest flying field in the world.

In a letter later handed to Mr. Patterson, President Coolidge said:

"The people of Dayton, in presenting this historic tract of 4,500 acres to the National Government have insured that it will always be maintained for the service that has won it fame. * * * I am writing to you because I want in this formal manner to record the Government's appreciation of this fine act, and to set down the assurance of my personal congratulations to the people of Dayton."

In tendering this gift personally to President Coolidge, Mr. Patterson placed the final seal on the splendid work begun by his father, the late John H. Patterson, founder of The National Cash Register Company, and its president for thirty-seven years, just before his death. The very last duties that occupied the mind of the late Mr. Patterson were those in connection with the U. S. Air Service Experimental Station in Dayton. At the last meeting in Mr. Patterson's office on Saturday morning the day before his death, his time was occupied in a discussion of the question of aviation in general, and the last document to which his hand was placed was a chart which he drew up as a guide for the action of those who were to carry on this work for aviation in this city.

Succeeding to the vast responsibilities and tremendous interests of his father, Frederick B. Patterson continued as a sacred trust his father's interest in aviation. Hearing that a decision had been made to move the Government aviation field from Dayton, it was Mr. Patterson who organized the Dayton Air Service Committee, which under his leadership secured options upon the farms comprising 663 acres of the tract and the 4,325 acres of Miami Conservancy land, making up a grand total of 4,988 acres, which was offered to the Government, and which has now been accepted.

The plan for financing the purchase was brought forward by President Patterson at a dinner given by him at the Dayton Country Club on Wednesday, October 25, 1922; among the prominent guests being: F. H. Rike, Valentine Winters, W. R. Craven, H. H. Darst, Irvin G. Kumler, Col. Frank T. Huffman, Col. E. A. Deeds, G. W. Shroyer, F. J. Ach, Chas. E. Comer, John C. Haswell, H. W. Karr, Ezra M. Kuhns, and John F. Ahlers.

Money for this project was raised by public subscription among Dayton's citizens, the entire amount being

pledged within two days. More than \$400,000 was subscribed. The total cost of the land was \$263,106, the balance of the \$400,000 being set aside as the nucleus of a fund which will be used for the purpose of erecting a fitting monument to the Wright Brothers, whose genius conquered the air and who won for Dayton, their home city, the glory of being known as the aeronautical leader of the world.

It was a great day for Dayton, when, in November, 1923, Mr. Frederick Patterson wired to Major General Patrick, Chief of the U. S. Air Service, as follows:

"Our public-spirited citizens today went over the top in the campaign to raise sufficient money to buy the new site for the Government's aviation experimental field on the easterly boundary of Dayton. They subscribed enough money to pay for the 5,000 acres in the proposed gift and a sufficient amount to be used as a nucleus for a memorial to the Wright Brothers.

"Steps will be taken at once to arrange for the legal transfer of land titles to the United States Government. They will be forwarded to you at the earliest possible moment.

"The spirit which dominated this campaign will ever mark the attitude of Dayton toward the United States Air Service. Our citizens always will extend a hearty hand of fellowship to its members. We are not unmindful of the kindly interest you have taken in this great project, and desire to thank you for your many courtesies and kind consideration.

"With best wishes for the continued wonderful progress of the United States Air Service, and assurance that Dayton always may be depended upon to do its share in furthering such a splendid and necessary cause, we are,

"The Dayton Air Service Committee, F. B. Patterson, General Chairman."

From the time of the swift raising of the money by patriotic Daytonians with the determination to make one of the greatest gifts to the nation that any city has ever made, the Dayton Air Service Committee, under the leadership of Mr. Patterson, has been continuously busy acquiring clear titles to the various parcels of land that go to make up the new flying field, with the assistance of the best legal talent obtainable, and this work has only recently been completed.

It was with intense satisfaction that, with all obstacles cleared out of the way, President Patterson betook him-

self to Washington and formally, on behalf of the citizens of Dayton, made the gift to Secretary of War Weeks, acting for the Government. But the officials in Washington were not content to allow such a mission to have a mere

formal character. They insisted that Mr. Patterson be taken to the White House, where he was most cordially received by President Coolidge and asked by the President to convey his thanks and appreciation to the people of Dayton. Before he left the White House he was handed the following autographed letter from the President:

"My dear Mr. Patterson:

"It was a genuine pleasure to receive this morning the call of yourself and your associates of the Dayton Air Service Committee who were brought in by General Mitchell to tell me about the conclusions of the transactions which make the McCook Field at Dayton the property of the United States Government. In making this splendid gift to the country, the citizens of Dayton have been inspired alike by motives of high patriotism and also of pride in the fact that Dayton was the home of the Wright Brothers, and that there, through their talent and tireless efforts, aviation had its birth.

"McCook Field will always be famous as the first of those training fields and terminals for aviation which now are scattered throughout the entire world. Upon it is reflected a full share of the glory won by thousands of American and other aviators who were trained there. It has been the scene of splendid services alike to the cause of science and to the national defense. The people of Dayton, in presenting this historic tract of 4,500 acres to the National Government have insured that it will always be maintained for the service that has won it fame. "You have enabled the creation of McCook Field into a perpetual monument to the men who first realized the full possibilities of navigating the air, and to that great first

generation of inventors and aviators whose services and sacrifices in the war and in the works of peace have made their list a roll of heroes.

"You have informed me that the transactions incident to transferring McCook Field to the National Government are now completed. I am writing you because I want in this formal manner to record the Government's appreciation of this fine act, and to set down the assurance of my personal congratulations to the people of Dayton and my gratification at having had a small part in it.

"Most sincerely yours,
"CALVIN COOLIDGE."

Returning from Washington, his mission accomplished, President Frederick B. Patterson said:

"I have never performed a more grateful task; I have never been assigned a pleasanter duty than that which I have just performed in formally making this splendid gift to the nation on behalf of the city of Dayton. The civic undertakings in which my father was so deeply interested have gone forward progressively and steadily along the lines laid down by his foresight and care. His work for the state and for the nation have borne fruition and now in the final establishment of Dayton as the scene of the finest flying field of the world, I seem to see that John H. Patterson's work has resulted in placing Dayton prominently in the forefront of international affairs. It is a great and well deserved compliment that President Coolidge has paid to the people of our city."

Mr. Patterson also pointed out that the final acceptance by the Federal authorities of the new flying field means a big impetus to the business of Dayton. It means a large expenditure for permanent buildings and the employment of a large force of skilled and unskilled labor. This will increase Dayton's population, cause many new homes to be built, and augment the business of the city's retail merchants. It will make possible many increased activities on the part of the experimental station, giving Dayton continuous world-wide publicity and attracting thousands of visitors.

In conclusion Mr. Patterson said: "I am glad to believe that the final acceptance by the Federal Authorities and the establishment in Dayton of what will ultimately be the most efficient flying field in the world will do a great deal to forward the development of commercial aviation in which our competitors in England and all over the continent of Europe are at present so immeasurably our superiors. I speak of commercial aviation particularly because it is only from an industry that is made profitable that we may really expect big things to result.

"There can be no doubt that in Europe the great development of commercial aviation has strengthened the armed powers of the nations that have encouraged it. It is through commercial aviation alone that we can hope to secure a great body of trained aviators or can expect to find the contest of the air progressing as land transportation and sea transportation have progressed steadily since they came into common use.

"I am a firm believer in Macauley's statement: 'Of all inventions, the alphabet and the printing press alone excepted, those inventions which abridge distance have done most for civilization,' and along the lines that Macauley mentions, I believe aviation has a high mission to perform in the world which mission will be greatly facilitated by the establishment of the Dayton flying field."



F. B. PATTERSON

President of the National Aeronautic Association

Major Herbert A. Dargue, Langley Field; Lieut. Col. Charles A. Danforth, air officer, 4th corps area, Atlanta, Georgia; Lieut. and Mrs. James H. Doolittle, McCook Field; Major Leonard H. Drennan, Washington, D. C.; Lieut. Col. Fechet, commandant, Kelly Field; Major S. W. Fitzgerald, asst. commandant, Kelly Field; Lieut. Col. and Mrs. Ira F. Fravel, Washington; Major and Mrs. Wm. H. Garrison, retired; Col. Chalmers G. Hall, Washington; Captain Hubert R. Harmon, McCook Field; Major Edward L. Hoffman, officers reserve corps, Cincinnati; Lieut. J. P. Johnson, Selfridge Field; Major B. Q. Jones, Washington; Lieut. Alvin C. Kincaid, Maxwell Field, Mont. Capt. and Mrs. Louis R. Knight, air officer, Boston, Mass.; Major and Mrs. Thomas G. Lanphier, commandant, Selfridge Field; Lieut. Clements McMullen, Brooks Field; Major James A. Mars, Washington; Major Harold S. Martin and family, Langley



Three well known American "Aces" who will attend the Air Races at Dayton.

Field; Major and Mrs. Henry J. F. Miller, Washington, O. C. A. S.; Lieut. Charles H. Mills and family, McCook Field; Lieut. Reuben C. Moffat, Washington; Lieut. Ivan G. Moorman, Kelly Field; Lieut. Vincent J. Melroy, Nashville, O. R. C.; Lieut. Langhorne W. Motley, Columbus, O. R. C.; Capt. Charles B. Oldfield, commandant, O. R. C., Muskogee; Lieut. Col. and Mrs. John A. Paegelow, commandant, Scott Field; Lieut. James E. Parker, Indianapolis; Lieut. Frank M. Paul and family, sup. officer, Chanute Field; Lieut. Donald B. Phillips and family, McCook Field; Major Henry C. Pratt, O. C. A. S., Washington; Lieut. George E. Rice, Kelly Field; Lieut. and Mrs. Arnold H. Rich, Middletown; Major H. H. C. Richards, O. A. C. S.; Captain and Mrs. Charles M. Savage, Scott Field; Capt. Burton E. Skeel and family, Selfridge Field; Lieut. Wallace G. Smith, Chanute Field; Captain and Mrs. Lorenzo L. Snow, Liaison Officer, Air Ser.; Major and Mrs. Carl Spatz, Langley

Field; Lieut. and Mrs. Charles W. Steinmetz, Washington; Lieut. and Mrs. St. Clair Streett, Bolling Field; Lieut. and Mrs. James D. Summers, Selfridge Field; Major and Mrs. Clarence L. Tinker, commandant, Air Service, Ft. Riley, Kansas; Lieut. Francis B. Valentine, O. R. C., Boston; Lieut. Ralph B. Walker, Eng. officer, Kelly Field; Major and Mrs. Roycroft Walsh, O. C. A. S., Washington; Capt. William D. Wheeler, Scott Field; Lieut. Frank E. White, Bolling Field; Lieut. John F. Whiteley, Langley Field; Lieut. Charles L. Williams, Langley Field; Lieut. Robert B. Williams, Kelly Field; Lieut. Russell L. Williamson, 2nd Div., San Antonio, Texas; Capt. Donald Wilson, O. C. A. S., Washington; Lieut. Kenneth B. Wolfe, Brooks Field; Lieut. and Mrs. H. F. Woodward, Kelly Field; Lieut. and Mrs. Burdette S. Wright, O. C. A. S., Washington; Lieut. E. C. Whitehead, Selfridge; Lieut. and Mrs. H. R. Yeager; Lieut. R. C. Zettel, Kelly Field.

Realizing the importance of the housing problem and the need for ascertaining the exact facilities available for the visitors in the city, air race officials have appointed Mr. R. L. Bailey, as executive of the housing committee.

A complete canvass of cities in the Miami Valley has been made and to ascertain the number of private homes, which will be available for visitors, Mr. Bailey has opened downtown headquarters on the ground floor of the Realty Building, Dayton, to receive such information.

Establishment of a complete telephonic system, making possible instant communication with various official stations, both on the field and within a radius of fifteen miles, is some assignment for any one man, to have completed within a short period of a few months.

This, however was the task given to Lieut. S. C. Eaton, at Wilbur Wright Field, officer in charge of communications for the Air Races.

That timers and judges stationed in various parts of



"Everything Goes Dead"—when a pilot makes a turn of the pylon when going four miles a minute, says Lieutenant A. J. Williams, Naval speed demon.

the field and in the different pylons along the three courses to be used in the races might be in instant communication with each other, it was necessary for Lieu-

tenant Eaton and his aides to string approximately fifty miles of telephone wires, install a like number of telephone stations and connections and arrange for suitable telegraphic connections in the press stand for the convenience of the visiting newspapermen.

At various points along the roads, to the pylons, it was necessary to string the telephone lines along fences and short poles, because of the absence of regulation telephone poles.

This work has practically been completed. In addition to the installation of such system, Lieutenant Eaton, also is arranging for the installation of loud speakers in front of the grand stand, connecting with the timers' and judges' stand, through which medium, spectators will be enabled to keep in touch with the different events.

Flyers and followers of air races generally, are interested in the formal announcement of the appointment and acceptance of Caleb S. Bragg of New York, as referee for the Air Races at Wilbur Wright Field, this October.

Mr. Bragg has served in a similar capacity at previous races and is well liked among the flyers for his fairness and dispatch in getting the contestants away in the races and in conducting the events properly.

In connection with the announcement of his selection for this post, B. Russell Shaw, race executive also announced the personnel of the Contest and Technical committees.

Frederick B. Patterson is chairman of the race committee and Fred H. Rike, vice-chairman.

Some of the most noted engineers in the country are members of the Contest and Technical committees, these having been selected for their engineering and technical experience. All willingly accepted the positions tendered them.

George B. Smith, Dayton is chairman of this committee; William B. Stout, Detroit, aeronautical engineer, vice-chairman; Rudolph W. Schroeder, former Major in the U. S. Air Service and at present technical engineer with the Underwriters' Insurance laboratories, Chicago; G. W. Lewis, Washington, secretary National Advisory committee for Aeronautics; Thomas B. Fordham, Dayton; John Hunt, Dayton; G. L. McCain, Detroit, formerly final design engineer at McCook Field, during the World War; F. O. Clements, Dayton; H. W. Asire, Dayton; Robert Insley, Dayton; Prof. E. P. Warner, professor Aero dynamics, Massachusetts Institute of Technology, Boston; B. Russell Shaw, race executive.

Howard Wehrle, Kansas City, a member of the National Contest committee of the N. A. A., has been named starter and L. L. Custer, Dayton, alternate; Odis Porter, Indianapolis, is named timer and will be assisted by C. S. Ricker, Indianapolis, alternate.

Charles M. Kelso, Dayton is chairman of the assistant timers; Gilbert Eichelberger, Dayton, chairman of scores, and C. D. Putnam, Dayton, chairman of judges.



Six Modes of Travel—Scene taken near Dayton and showing River, Canal, Electric Line, Steam Railroad, National Highway and one of the original Wright Airplanes all in one view.



The Stout Metal Air Pullman, built in Detroit, will be presented at the Air Races and furnish one an idea of how pretentious our modern Air Transports will be fitted for the comfort and enjoyment of the aerial passenger.

Mexico, as a government is deeply interested in aeronautics, and proposes to demonstrate to the world that its planes and flying personnel is equal to the needs of the country and as modern as it can be made, through active participation in the International Air Races at Wright Field in Dayton, this October.

This was evidenced during the past week with the receipt of a letter by B. Russell Shaw, race executive from General Gustavo Salinas, Secretary of the Department of Aviation of Mexico, stating that the Mexican government proposes to have four pilots entered in at least two races during the meet.

With the formal entrance of this country into the race meet, the international aspect to the meeting, becomes more pronounced. To date four countries will be officially represented at the races, these being America, France, Canada and Mexico, while civilian and military pilots who propose to participate in the different events hail from practically every nation in the world.

According to General Salinas, who is in charge of the construction of military and civil airplanes at the National Aeronautic shops in Mexico City, the government proposes to enter one plane, with a 185 horse power motor in the On-to-Dayton race, the initial event on the three-day program. In this event, judging from General Salin-

as' correspondence, it is proposed to make the trip to Dayton in two jumps. From Mexico City the plane will go either to Houston or San Antonio, from where a non-stop flight, or one additional stop in between, to Dayton will be attempted.

The matter of refueling and landing a plane in the United States is to be taken up with the Foreign office at Washington, such permit for a plane from a foreign country being necessary.

It is planned also to have another plane shipped to Dayton, which will be entered in the Liberty Engine Builders' race. Two of the four pilots will fly to Dayton in the On-to-Dayton race, while two others will accompany the plane to be shipped by rail.

The greatest gathering of civilian and commercial flyers will attend and participate in the International Air Races at Wright Field this October, and will bring with them the largest assortment of planes ever assembled at any similar event in the history of aviation.

Young and old, experienced and novice pilots are taking to the races with an interest that promises to tax the limitations of the entry list for all events, is the belief of race officials.

In addition to the Fairchild Aerial Camera Corporation

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of New York, planning to enter several planes, Richard H. Depew, Jr., manager of the flying division of the company plans to fly to Dayton as a contestant in the On-to-Dayton race.

Others who are interested in the initial race on the program are: William A. Burke, Okmulgee, Okla.; L. A. Hjulín, sales manager for the Jensen Studios and Aircraft Company of Minneapolis, Minn.; Edwin S. Woodford, Santa Fe, N. M.; E. J. Minnaugh, La Grange, Ore.; H. H. Snow, Grosbyton, Tex.; Harry Rogers, Curtiss agent at Rye, N. Y.; V. A. Davis, Sandy Lake, Pa.; F. E. Breen, Detroit, Mich.; and W. A. Stewart of Helena, Mont.

Ted Mollendick, youngest active pilot in the world will be one of four pilots which will represent the Swallow Airplane Company of Wichita, Kansas, in the On-to-Dayton race and other events on the program. In fact these four pilots, who in addition to Mollendick are Walter H. Beach, Ira Beech and Lloyd Stearman, will have a race of their own on the way to Dayton, each planning to capture some of the prize money in the On-to-Dayton race, with different type planes.

Others interested in the races, as regards other events include: W. A. Yackey, manager of the Yackey Aircraft Company, of Chicago; T. Jay Ellis, Eldorado, Kan.; J. Paul Herman, nineteen years old, Lewisburg, Pa.; Andre Tempe, Americus, Ga.; George W. Williams, Temple, Tex.; Horace G. Reese, Naples, N. Y.; Leo Cimijotti, Mason City, Ia.; Kenneth Cole, Painesville, Ohio; Russell Nicholas, Marshall, Mo.; A. W. Kidder, Minneapolis, Minn.; L. H. Allison, Lawrence, Kan.; and Edward J. Foster, Blackwell, Okla.

NOTICE TO RACE ENTRANTS

For the benefit of entrants in the International Air Races, a notice has been given by B. Russell Shaw, race executive, to the effect that free entries close September 1. 25% penalty entries close September 8; 50% penalty entries close September 15. Entries received after September 15 will only be accepted with the written consent of all other entrants, and the entry fee will not be refunded.

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the fog closed
in about me"*

—All sense of direction gone—the compass spinning like a top—a growing uncertainty—a slight touch here and there passing into the continuous working of all the controls—

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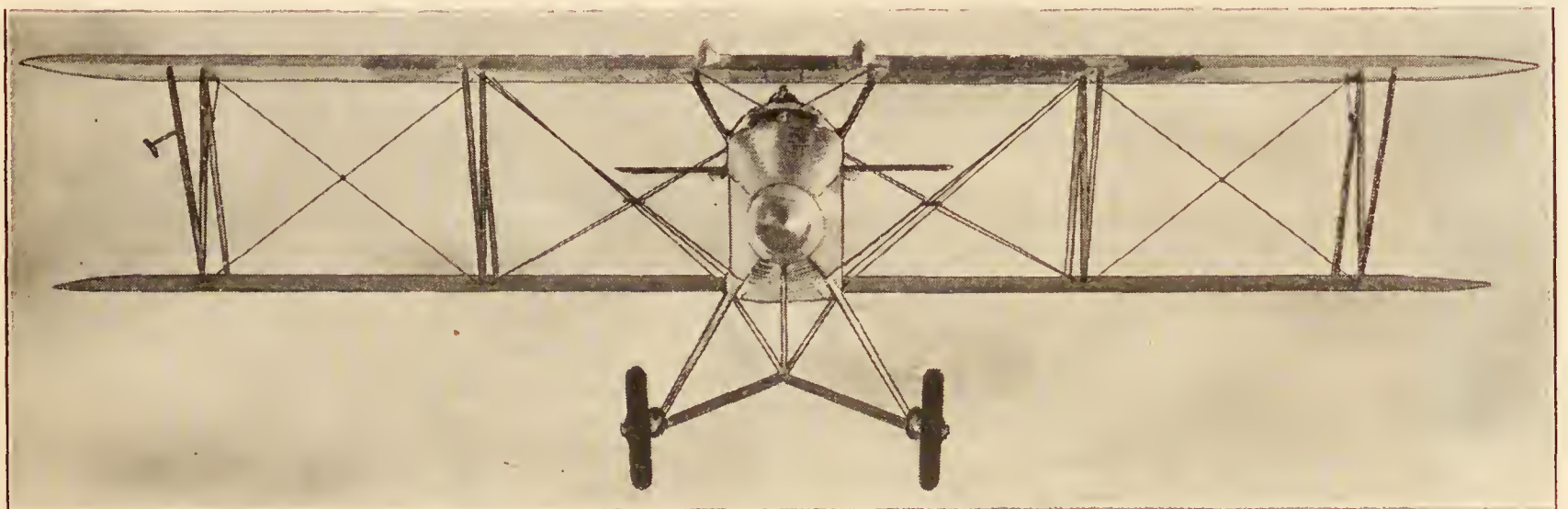
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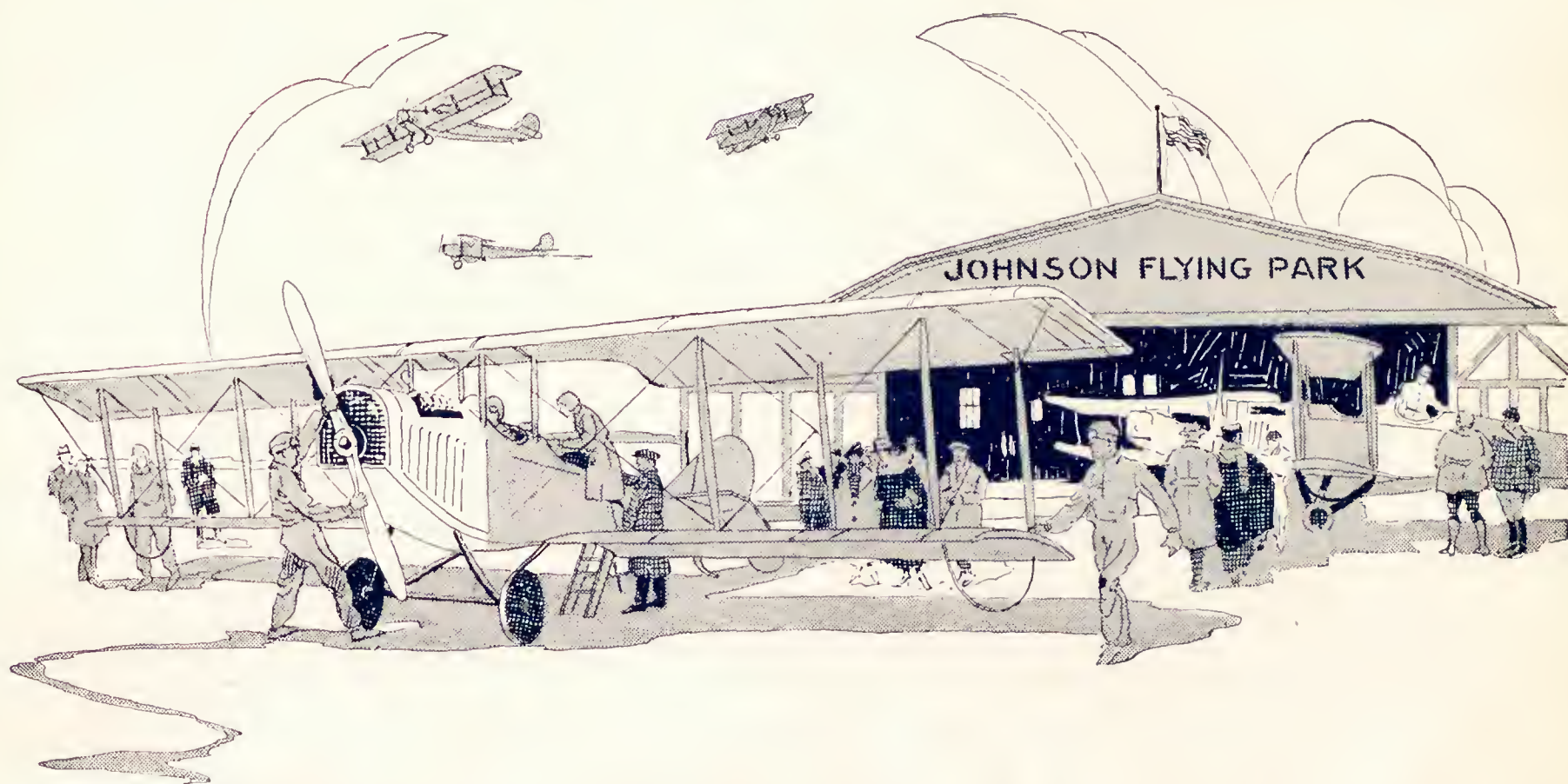


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Above—Huge crowds at Paris greet the American World Fliers. P. & A. Photo.

At right—Lieut. Lowell H. Smith, commander of the flight, is welcomed at London by Mrs. Stuart MacLaren, wife of the British flier. International Photo.



Arctic Blizzard and Tropic Heat fail to injure Valspar!

NEARLY FIVE MONTHS after the take-off at Clover Field, California, the Round-the-World Fliers arrived at Reykjavik, Iceland, having flown over 18,000 miles.

The "New York Times" of August 10th described their remarkable flight in the following words:

"They have fought their way through blinding snow of the Far North, where at any moment they might have gone crashing to their death. They flew through the blistering heat of the tropics where others have found the wings of their machines disintegrating under the rays of the sun. They dared hurricanes and sandstorms, negotiated jungles and deserts and flew over the cradle of ancient civiliza-

tion, their winged craft carrying them at more than a mile and a half a minute."

And further quoting from the July 18th issue of the "Times," describing their arrival in England:

"One remarkable feature was the fact that the original varnish was still in first-class condition, while the French and British planes were forced to revarnish after they had covered much less than the same distance."

The "original varnish" was Valspar, of course!

Below—The fliers arrive at Croyden Aerodrome, near London, where they are given a hearty welcome. International Photo.

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